TEXTILE WORLD

MAY • 1944

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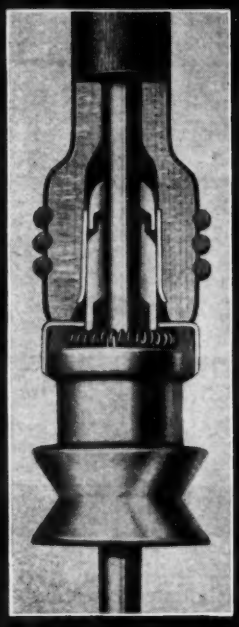
ECHNOLOGY DEPT

Spindle Repairs! You can have the Work Done Now

The Government
Permits Repairs

And We Are in Position
to Make Them



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We repair All Makes of Spindles
Furnish Bolsters for all makes
Supply Clutches for all makes
Renew Whorls for all makes

We do NOT Patch Blades
We DO replace old Forged Blades with Modern Spring-tempered Blades that do not bend in Doffing

Have Spindles fitted with Stimpson Patent Clutch ❖ ❖ It Will Outlast a Solid Whorl ❖ ❖ It insures even Yarn Packages and as much Yarn as the Bobbin will hold ❖ ❖ Bobbins do not Vibrate or Rise ❖ ❖ Yarn is not spun over the rings and butt

We Are Doing a Large Business in
Repairing Twister Spindles for Rayon

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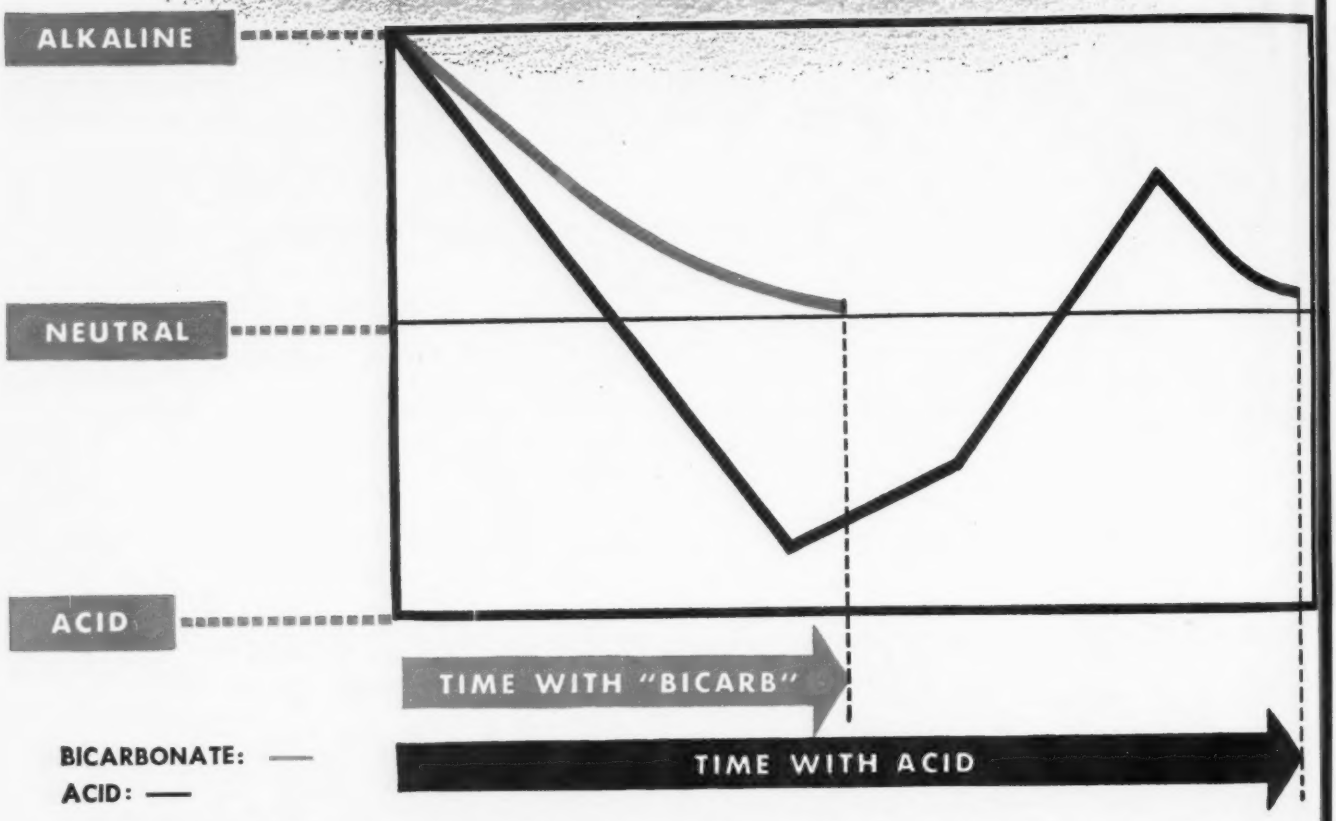

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Originated and commercially developed by Mathieson Research, this new process achieves decided advantages over customary acid neutralization:

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- *no health or other hazards involved.*
- *production speeded by elimination of additional steps necessitated by acid process.*
- *careful chemical control unnecessary.*
- *goods are washed in hot water and treated in hot bicarbonate bath, which makes them whiter, softer and highly absorbent.*

Removal of caustic with bicarbonate is applied (1) after scouring on continuous boil-off machines, (2) after scouring in jigs, (3) after warp mercerizing of yarn, (4) after skein mercerizing of yarn, (5) after mercerizing of piece goods, (6) after kier boiling, and (7) after alkaline steaming, particularly caustic steaming, in the new continuous scouring and bleaching processes.

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CHEMICALS

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TABLE OF CONTENTS

Classified According to Reader Interest

← MILL DEPARTMENTS

FIBER DIVISIONS →

YARN PRODUCTION	WEAVING	KNITTING	FINISHING	ENGINEERING	MISCELLANEOUS		PAGE	COTTON	SYNTHETICS	WOOL	MISCELLANEOUS
Y	W	K	F	E	M	Precautions for the Post Postwar (Editorial)	4	C	S	W	M
Y						Calculating Roving Production	71	C	S		
Y	W					Rayon Tire-Cord Production	79		S		
				E		Safety Color Code for Textile Mills	80	C	S	W	M
				E		Maintenance of Electronic Controls	82	C	S	W	M
			F		M	Color-Aptitude Test Developed for Textiles	84	C	S	W	M
				E		Metallizing on Increase, STA Engineers Told	86	C	S	W	M
Y	W	K	F			Sampling Plan Developed by QM	88			W	
			F			Machines and Methods for Plastic Coatings	90	C	S		
	W					Defects in Woolen Fabrics	93			W	
		K	F			Shrink-Resistant Process for Army Socks	95			W	
		K				Postwar Hosiery Machines	97	C	S	W	
	W					Methods for Conserving Gelatin	99		S		
	W					Recurring Defects in Synthetic Fabrics	101		S		
	W				M	Postwar Opportunities for Wool Goods	103			W	
				E		Textile Engineers Discuss Safety	105	C	S	W	M
Y						Running Rayon Staple on Cotton System	109	C	S		
		K			*	Improved Fit with New Full-Fashioned Heel	111	C	S		
Y	W	K	F	E	M	Institute of Textile Technology Incorporates	113	C	S		
Y	W	K	F	E	M	Textile Men Want OPA, but Changed	115	C	S	W	M
Y	W	K	F	E	M	Meetings of the Month	119	C	S	W	M
Y	W			E	M	Produce, Cotton Men Urged (ACMA)	119	C			
Y	W				M	Danger to Wool Goods in Foreign Trade Policy	119			W	
		K				Postwar Nylon Counts on Hosiery (NAHM)	121	C	S		
	W					Unity Strengthens Rayon Weavers (NFT)	121		S		
	W					Loomfixers' Manual—Wool	125			W	
		K				Fixing Hosiery Machines—Circular	127	C	S	W	
		K		E		Inter-Floor Handling of Hosiery at Gotham	129	C	S	W	M
Y						Improved Flyer Frame	130	C	S	W	M
		K				Multiple-Feed, Latch-Needle Knitting Machine	130	C	S	W	M
				E		Useful Accessories for Textile Mills	132	C	S	W	M
				E		Lighting Maintenance Schedule	132	C	S	W	M
				E		Handling Linen Fire Hose	134	C	S	W	M
				E		Examine Used Packing	134	C	S	W	M
				E		Maintenance Chart for Chain-Belt Drives	134	C	S	W	M
	W					Leather Loop Used to Tension Protector Rod	136	C	S	W	M
				E		Method for Removing Damaged Screws or Bolts	136	C	S	W	M
			F			Infra-Red Reflectors Aid Printing of Rayon	138		S		
Y	W	K				Double Weaver's-Knot Recommended for Rayon	138		S		
Y						Bobbin Design Helps Worsted Yarn Spinning	138			W	
	W					Salvaging Broken Checkstraps	140	C	S	W	M
	W					Emery-Rubber Eraser Useful for Polishing	140	C	S	W	M
		K				Treatment Improves Lace Hosiery Blanks	140		S		
	W					Prevent Loose Picks with Filling Sizing	140		S		
				E		Handy Loss Calculator	142	C	S	W	M
	W					Protect Beam Edges with Old Rubber Hose	142	C	S		M
Y						Favorable Comment on Cotton Sampling Plan	150	C			
Y						Cotton Sampling Plan Called Unworkable	150	C			
Y						Largest Picker Lap	154	C			
	W					Power Understated for Auxiliary Dryer	156	C			
Y						How to Stop Roving from Slipping on Bobbins	156	C			
Y						Methods to Figure Drafting on Mules	156			W	
			F			Bleaching Absorbent Cotton	158	C			
Y						Kinked Woolen Yarn	160			W	
Y		K				Imperfections in Rayon Knitting Yarn	164		S		
				E		Spontaneous Combustion as a Cause of Fire	166			W	
	W					Elastic Fabrics	168		S		M

TEXTILE WORLD

MAY 1944 — VOLUME 94 NUMBER 5

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DEPARTMENTS

Editorial 4
Textile Equipment News.....129
Mill Maintenance 132
Kinks & Shortcuts.....136
Pete & Bill.....145
Free For the Asking.....148
Round Table 150
Questions and Answers.....158
Boosting Employees' Morale...170
News of the Month.....178
Book Reviews 182
News About Suppliers.....184
News About Men.....192
News About Mills.....206

Editorial

PRECAUTIONS for the POST POSTWAR

ON APRIL 6 the Institute of Textile Technology was established as a Virginia corporation, with headquarters in a large school building in the historic old city of Charlottesville. If the ghost of a great American, Thomas Jefferson, should look down from his nearby hilltop residence of Monticello upon this interesting new enterprise, he would offer a smile of approval, because a sincere hope well intrenched in the minds of some of the founders of the institute is that it will prove distinctly beneficial to America. These gentlemen are looking beyond both the war boom and the postwar boom to a time when it may become necessary to protect the very existence of American textile workers and of the towns and villages which house them.

They are not worrying primarily about competition in export markets—they are thinking very definitely about competition in the domestic market. They remember that before the war Japan, with a wage of a few cents a day, was able to undersell them in the United States; and they see little hope that a protective tariff will ever prove acceptable to Congress that allows for a difference in labor costs between our country and others of several thousand percent. Indeed, the modern trend in tariffs seems to be the other way.

The American cotton-textile industry has migrated once in a search for lower costs. It can migrate again—and farther away than we have ever dreamed.

WE CANNOT HOPE, of course, to match completely the lower costs which for an indefinite period will be possible in other countries, as our steps toward higher efficiency can be imitated abroad. And while it is true that reluctance to purchase expensive labor-saving machinery is the greater the less expensive is the labor which it replaces, powerful rulers in relatively backward countries tend to force industrialization beyond the point to which the laws of economics would normally carry it. Nevertheless, reduction in labor costs here, coupled with the inevitable rise in labor costs in foreign countries as they become industrialized, will tend to reduce the unfavorable differential. The more alert manufacturing country has little to fear when the basic factors are reasonably equitable.

The founding of the Institute of Textile Technology is in itself evidence that we have the necessary alertness today. And it is not the only cooperative research organization—there is the longer-existing Textile Research Institute. There are other research organizations, smaller or of more limited sponsorship, such as Callaway Institute and several divisions of textile associations, as well as the research departments of textile schools, of the Federal Government, and of individual mills. The Textile Foundation, while contemplating gradual liquidation in favor of industry-supported research, is also functioning, with a large staff at the Bureau of Standards.

SOME OF THESE ORGANIZATIONS are industry wide in the scope of their activities, such as the Textile Research Institute. Others are limited to one or two divisions of the industry, as is the new Institute of Textile Technology, which is to serve only mills employing the cotton type of machinery. That many overlap in their interests and functions is all to the good, as textile research is too important a responsibility to be intrusted totally to any one group of individuals. As time goes on, each organization is likely to classify itself as a specialist in this or that phase of textile activity, on the basis of the particular qualifications of its personnel, the facilities which it builds up, or the interests of its chief sponsors. An Inter-Society Council for Textile Research has been formed, with headquarters at the Textile Research Institute, to help coordinate the work of the various organizations.

It is important that the textile industry, now embarked on so many research programs, cooperative and private, bear in mind that research takes time. Spectacular results cannot be expected quickly—even after the difficult tasks of raising the money and building and equipping the organizations have been completed. False starts must be allowed for, promising trails which lead to dead ends must be traversed and abandoned, and countless disappointments must be borne patiently before the rewards of research can be realized.

Therefore, it is not too early to have the work begun—while the war boom is with us and while the postwar boom is still before us. Money is more readily available today than it will be at the time the results are most urgently needed. Consequently, it is well for all textile mills to begin investing generously now in such enterprises.

Elwin D. Towle

HEADLINERS

HATS off to King Cotton! He's in the news again with these cotton, plastic-impregnated helmet liners.

Producing these and the 11,000 other cotton items used by our Armed Forces, mill operators are getting more hours of continuous, trouble-free operation from machines lubricated with Texaco.

Texaco Stazon, for looms, assures efficient lubrication with minimum spoilage of yarn or fabric due to oil stain. It stays on fast-moving cranks, etc., withstanding load shocks without splattering, creeping, dripping. Its high stability prevents excessive formation of non-lubricating deposits in bearings or enclosed housings. For loom cams, use *Texaco No. 919 Lubricant S.*

So effective have Texaco lubricants proved that they are definitely preferred in many fields, a few of which are listed on the right.

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THEY PREFER TEXACO

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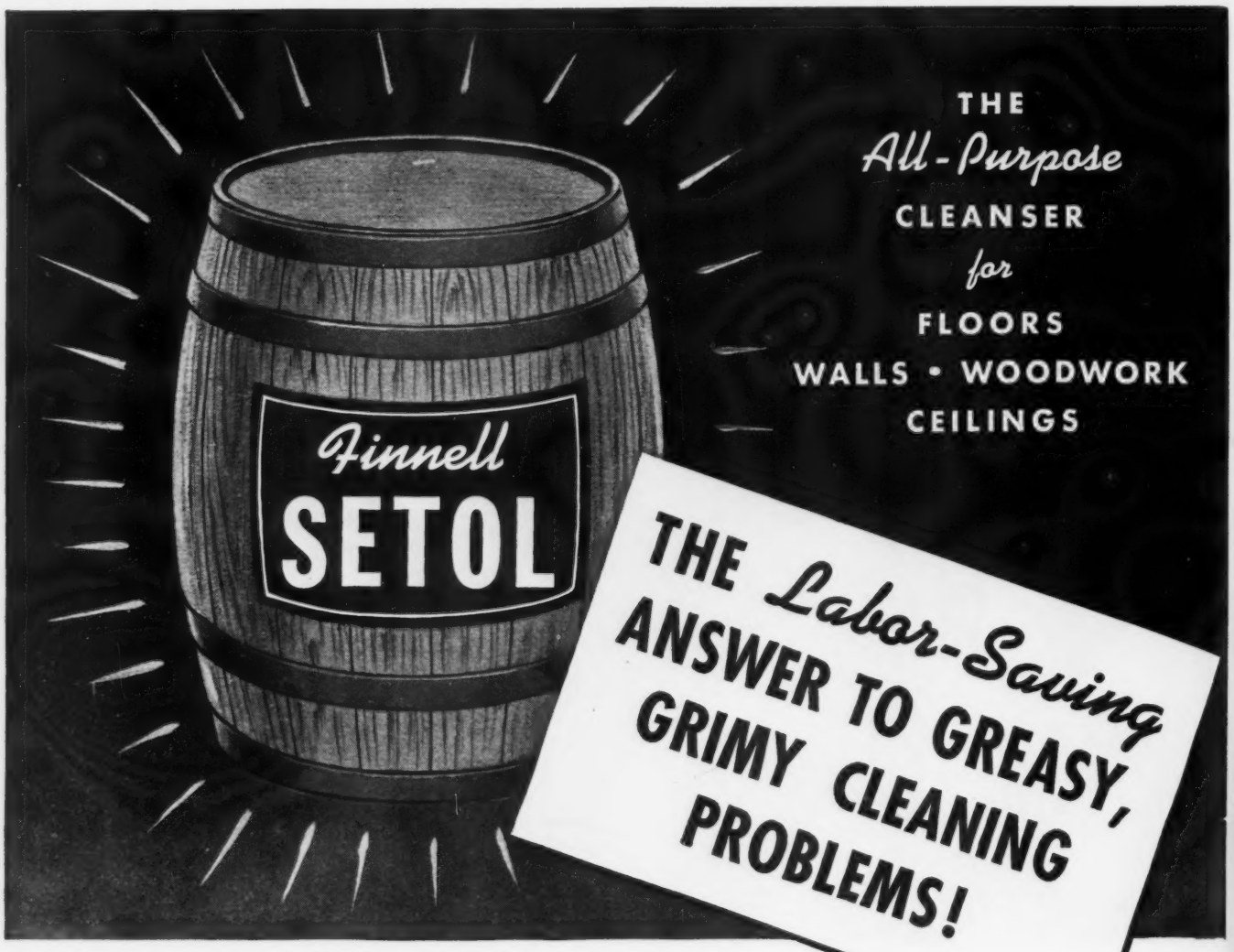
FOR THE TEXTILE INDUSTRY

TUNE IN FRED ALLEN EVERY SUNDAY NIGHT – CBS ★ HELP WIN THE WAR BY RETURNING EMPTY DRUMS PROMPTLY



Amazingly Fast . . . Safe . . . Thorough

Setol is an oil emulsifier—*it breaks down oils*—hence the speed with which it penetrates and removes stubborn coatings of grimy oil and grease.

Though best known for its wonderful cleansing action on hard-to-clean mill and factory floors, *Setol* has proved equally effective for cleaning heavily soiled painted walls and ceilings. It's thoroughly safe . . . free from harmful properties that *clean away* the finish and discourage repeated cleaning. *Setol-cleaned surfaces save frequent redecorating!*—a timely consideration. In man-hour savings, this *multiple-purpose product* pays for itself many times over.

Setol is both soluble and sudsless. And as a cleanser for use in scrubbing machines on mill and factory floors, it surpasses all other types. Compounded in *Finnell's* own powder mill, and sold in barrels, half-barrels, and quarter-barrels.

For literature or consultation, phone or write nearest *Finnell* branch or Finnell System, Inc., 1905 East Street, Elkhart, Indiana.

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The 600 Series Finnell scrubs, waxes, polishes, steel-wools, sands, grinds. 5 sizes. Equipped with *Feather-Touch* Safety Switch. Available to essential users qualifying on Application Form PD-722.

FINNELL SYSTEM, INC.

Pioneers and Specialists in

FLOOR-MAINTENANCE EQUIPMENT AND SUPPLIES

BRANCHES IN ALL PRINCIPAL CITIES

Yes, Men Make Motors!

NO MACHINE KNOWN can duplicate the skill of Sam Meister, left, of Allis-Chalmers Norwood Works.

Holding an acetylene torch in his right hand, a silver alloy rod in his left, Sam silver-brazes end connections of Allis-Chalmers' "Indestructible Rotor."

Round and round the connections he works — expertly flowing in molten alloy to form a joined structure that can withstand as much heat as though it were a single die-casting.

No machine can do that job — and no machine can fully test how well it is done.

There's only one test . . . wait 5, 10, 15 years and *see.*

And that's the test in which Allis-Chalmers motors have proved over the years that they're *great* motors. That's why you hear it said so often: *"You can depend on Allis-Chalmers Motors!"*

• • •

YES, HUNDREDS of Allis-Chalmers men—craftsmen like Sam Meister — know they have a big personal stake in every Allis-Chalmers motor. When they build a great motor for you, they're making a *friend* . . . and they know that's something no company and its workers can have too many of.

Next time *you* need great motors contact our district office. Or write direct to ALLIS-CHALMERS, MILWAUKEE 1, WISCONSIN.

A 1730

AC — WE WORK FOR VICTORY — WE PLAN FOR PEACE

♪ *Tune in the Boston Symphony, Blue Network, Saturday at 8:30 pm, EWT.*

YOU CAN DEPEND ON ALLIS-CHALMERS MOTORS

. . . to utilize floor space so as to achieve the ideal in continuity of production.

Saco-Lowell-ize

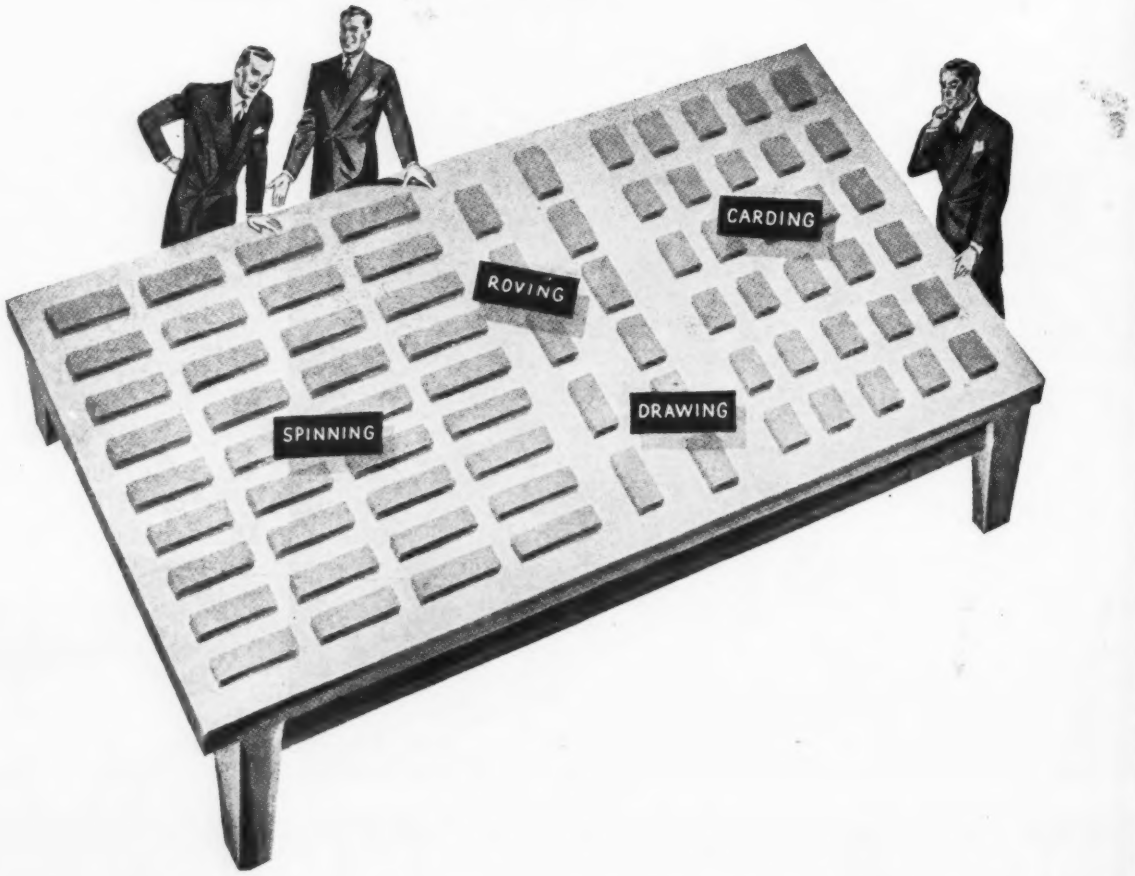
In the coming post-war era, production costs will, as always, be a major problem with management. Continuity of production to effect savings in floor space, reduce the number of operating units, and minimize stock handling will continue to be factors in the cost structure.

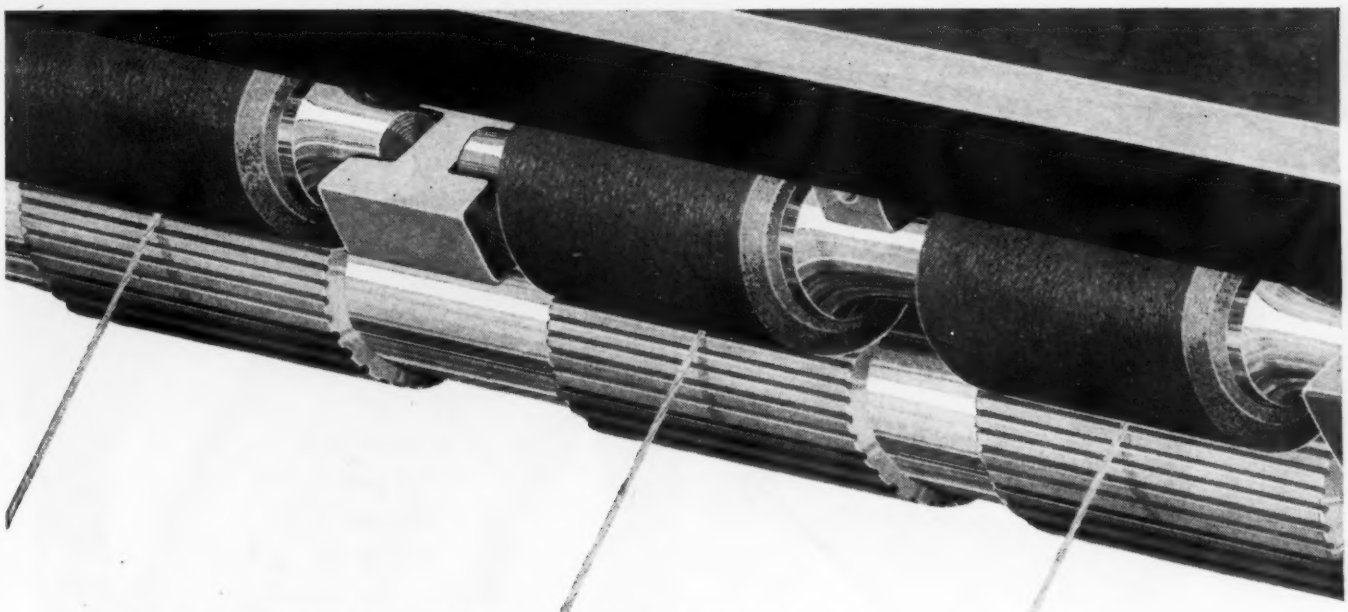
Today, the examination of existing installations for the purpose of discovering a better utilization of floor space and equipment is a current responsibility of management. Many progressive mills are looking ahead right now and preparing plans for a Saco-Lowell-ization program, to be started immediately when war production is over.

SACO-LOWELL SHOPS

60 Batterymarch Street, Boston, Massachusetts

Charlotte ***Greenville*** ***Atlanta***





FEWER ENDS DOWN

. . . because Armstrong's cork is uniform!

ARMSTRONG'S Cork Cots are uniform throughout—both in density and in dimensions. These cots are made from granulated cork that has been carefully screened for size, thoroughly mixed with the proper binder, and then carefully processed to assure uniform density. There are no soft or hard spots to grip the yarn unevenly. And buffing gives each cot a true, concentric surface—attainable only in a manufactured material. That's why Armstrong's Cork Cots reduce end breakage and minimize top roll lapping.

The surface of these cots is velvety smooth, too, with no rough spots to pick up fibers. Yet Armstrong's Cork Cots have a higher coefficient of friction than any other roll covering. As a result, they reduce clearer waste, eliminate "eye-browing," and produce strong yarn with fewer slubs. And the yarn is even, because cork resists "hollowing out" and does not "flow" under pressure.

The toughness and durability of Armstrong's Cork Cots give them a long service life. When they do begin to show signs of wear, they can be rebuffed—made like new—three or four times. Each cot thus gives four to five service lives.

Ask your Armstrong representative for complete information about Armstrong's Cork Cots—how they give better running work, help turn out more poundage, and reduce roll covering costs. Or, write direct to Armstrong Cork Company, Textile Products Section, 8305 Arch Street, Lancaster, Pennsylvania.

BETTER RUNNING WORK

— MORE POUNDAGE

ARMSTRONG'S CORK COTS

ACCOTEX COTS* • ACCOTEX APRONS*

* SYNTHETIC RUBBER

1. Experimental synthetic fibres.
2. Photomicrograph of wool fibre.

Will the synthetics eventually crowd natural fibres out of postwar markets?

Sunday feature writers like to pose that question, then answer it by painting a future in which vast chemical plants will take over the production of textiles, and the Southern cotton field and Western sheep range will be only memories.

If those present-day Jules Vernes could take a trip through one of the Monsanto laboratories concentrating on textile research, however, they would write a different story.

True, they would see research men working with new synthetic fibres of great promise. But in the next laboratory they might find another research team searching with equal concentration for new resins with which to treat wool and cotton fibres so that their basic weaknesses would be overcome and their basic virtues enhanced.

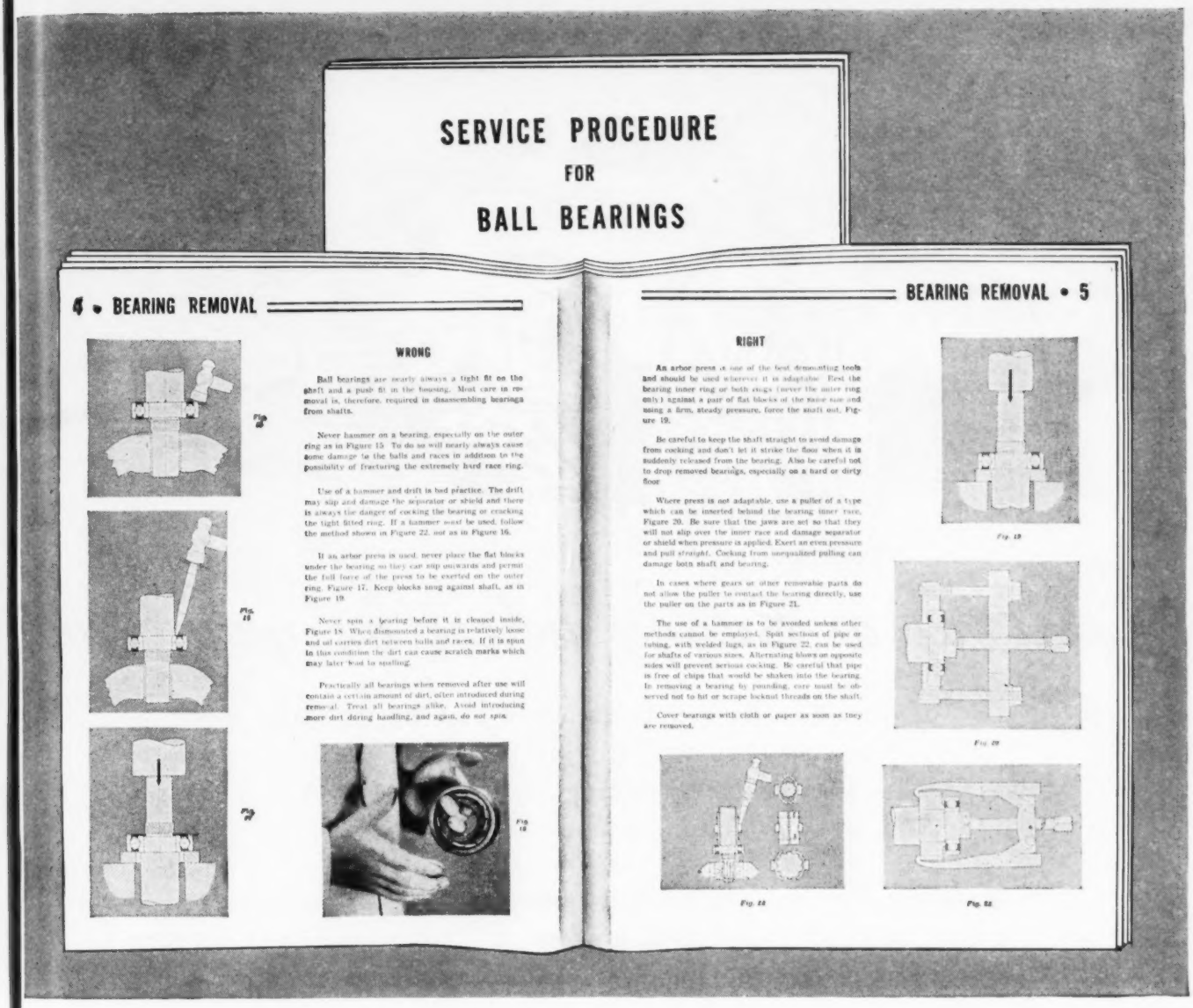
The fact is, of course, that *both* the synthetic and natural fibres have a brilliant future and that the chemical industry has important contributions to make to both.

That's why it pays you, whether your interest is in synthetic or natural fibres, to work closely on *your* problems with a well-equipped team of textile specialists like Monsanto's research and technical service staffs. MONSANTO CHEMICAL COMPANY.

MONSANTO
CHEMICALS AND PLASTICS

Divisions cooperating in Monsanto's integrated research and technical service program for the textile industry—Organic Chemicals Division, St. Louis; Plastics Division, Springfield, Mass.; Phosphate Division, St. Louis; and Merrimac Division, Everett Station, Boston 49. Inquiries should be addressed to Merrimac Division.

The Textile
SERVING AN INDUSTRY
WHICH SERVES MANKIND


SERVICE PROCEDURE
FOR
BALL BEARINGS
4 • BEARING REMOVAL
WRONG
Ball bearings are nearly always a tight fit on the shaft and a push fit in the housing. Most care in removal is, therefore, required in disassembling bearings from shafts.
Never hammer on a bearing, especially on the outer ring as in Figure 15. To do so will nearly always cause some damage to the balls and races in addition to the possibility of fracturing the extremely hard race ring.
Use of a hammer and drift is bad practice. The drift may slip and damage the separator or shield and there is always the danger of cocking the bearing or cracking the tight fitted ring. If a hammer must be used, follow the method shown in Figure 22, not as in Figure 16.
If an arbor press is used, never place the flat blocks under the bearing so they can slip outwards and permit the full force of the press to be exerted on the outer ring. Figure 17. Keep blocks snug against shaft, as in Figure 19.
Never spin a bearing before it is cleaned inside, Figure 18. When dismounted a bearing is relatively loose and oil carries dirt between balls and races. If it is spun in this condition the dirt can cause scratch marks which may later lead to spalling.
Practically all bearings when removed after use will contain a certain amount of dirt, often introduced during removal. Treat all bearings alike. Avoid introducing more dirt during handling, and again, do not spin.
BEARING REMOVAL • 5
RIGHT
An arbor press is one of the best dismounting tools and should be used wherever it is adaptable. Rest the bearing inner ring or both rings (never the outer ring only) against a pair of flat blocks of the same size and using a firm, steady pressure, force the shaft out, Figure 19.
Be careful to keep the shaft straight to avoid damage from cocking and don't let it strike the floor when it is suddenly released from the bearing. Also be careful not to drop removed bearings, especially on a hard or dirty floor.
Where press is not adaptable, use a puller of a type which can be inserted behind the bearing inner race, Figure 20. Be sure that the jaws are set so that they will not slip over the inner race and damage separator or shield when pressure is applied. Exert an even pressure and pull straight. Cocking from unequalized pulling can damage both shaft and bearing.
In cases where gears or other removable parts do not allow the puller to contact the bearing directly, use the puller on the parts as in Figure 21.
The use of a hammer is to be avoided unless other methods cannot be employed. Split sections of pipe or tubing, with welded lugs, as in Figure 22, can be used for shafts of various sizes. Alternating blows on opposite sides will prevent serious cocking. Be careful that pipe is free of chips that would be shaken into the bearing. In removing a bearing by pounding, care must be observed not to hit or scrape locknut threads on the shaft.
Cover bearings with cloth or paper as soon as they are removed.

here is the book you want

• Where proper servicing technique is used, thousands of ball bearings have been put back into service that might otherwise have been damaged or unnecessarily discarded.

Now that the demand for ball bearings is in excess of the ability of American manufacturers to deliver, even with our phenomenal production record, every good bearing returned to service after overhaul hastens the putting of planes back in the air.

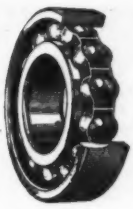
To help both trained men and those of lesser experience a new booklet entitled "Service Procedure for Ball Bearings" has been written to give in simplest terms all of the steps from dismounting, cleaning, judging condition, to remounting, fully described and illustrated with drawings and photographs. This book is available free and promptly in any reasonable quantitites. Just ask for booklet SP.

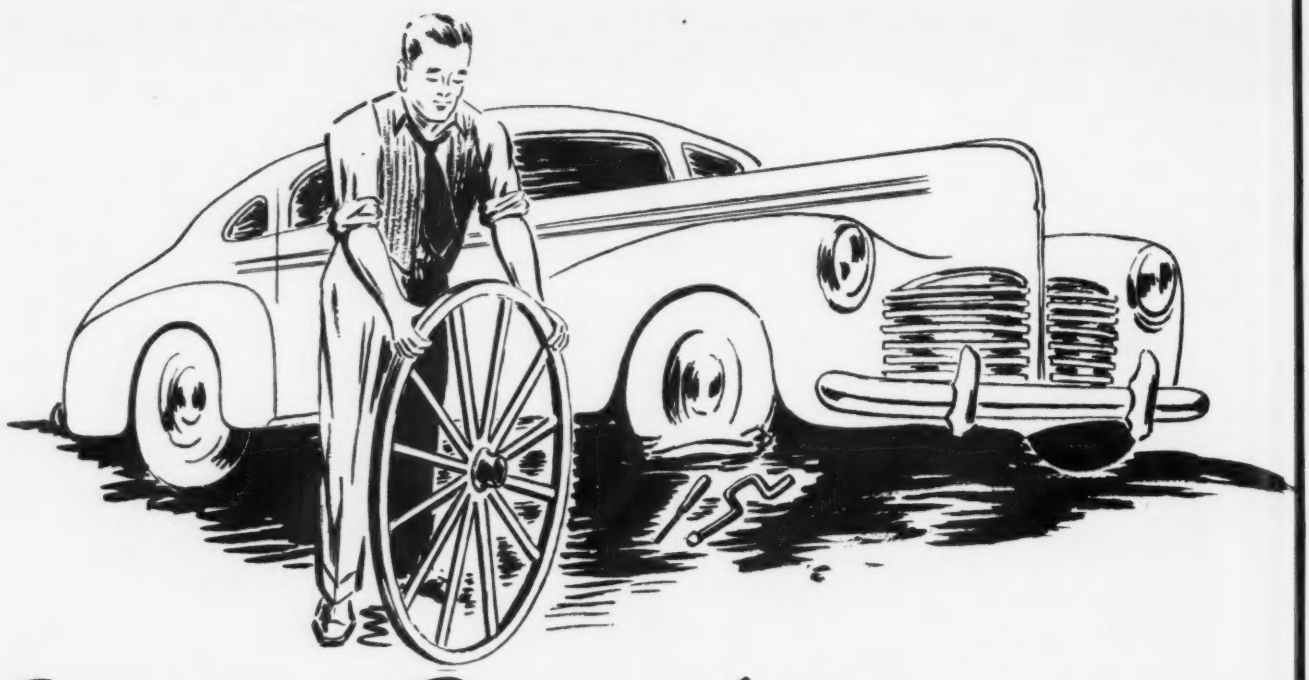
New Departure, Division of General Motors, Bristol, Connecticut.

3243

NEW DEPARTURE

BALL BEARINGS





Ever try a Buggy wheel on your car?

Of course not—even the best buggy wheel would be useless! . . . And it's just about as hard to obtain satisfactory results by putting anything but a Whitin-made repair part on a Whitin machine.

WE recently had a complaint from a good mill customer regarding excessive wear of Whitin spindles. Investigation revealed that wear was caused by the use of "just-as-good" bolsters, *from another source*, which were neither designed nor machined to fit either Whitin spindles or bolster cases. Complete replacement with Whitin bolsters *and spindles* was necessary. This is a case history of what is usually experienced when mongrel parts are used . . . dissatisfaction . . . complaints . . . lost production . . . extra expense . . . and all avoidable.

If you are ever tempted to buy "buggy-wheel" repair parts . . . remember two things:

1. Every part of every Whitin machine is designed for a specific purpose and in correct relationship to its function with other working parts.
2. Only Whitin has the exact specifications, the necessary jigs, fixtures, gauges, and special tools to maintain proper operating tolerances and insure exact duplication.

Don't fix your "flats" with "buggy wheels" . . . .

Use only Whitin parts

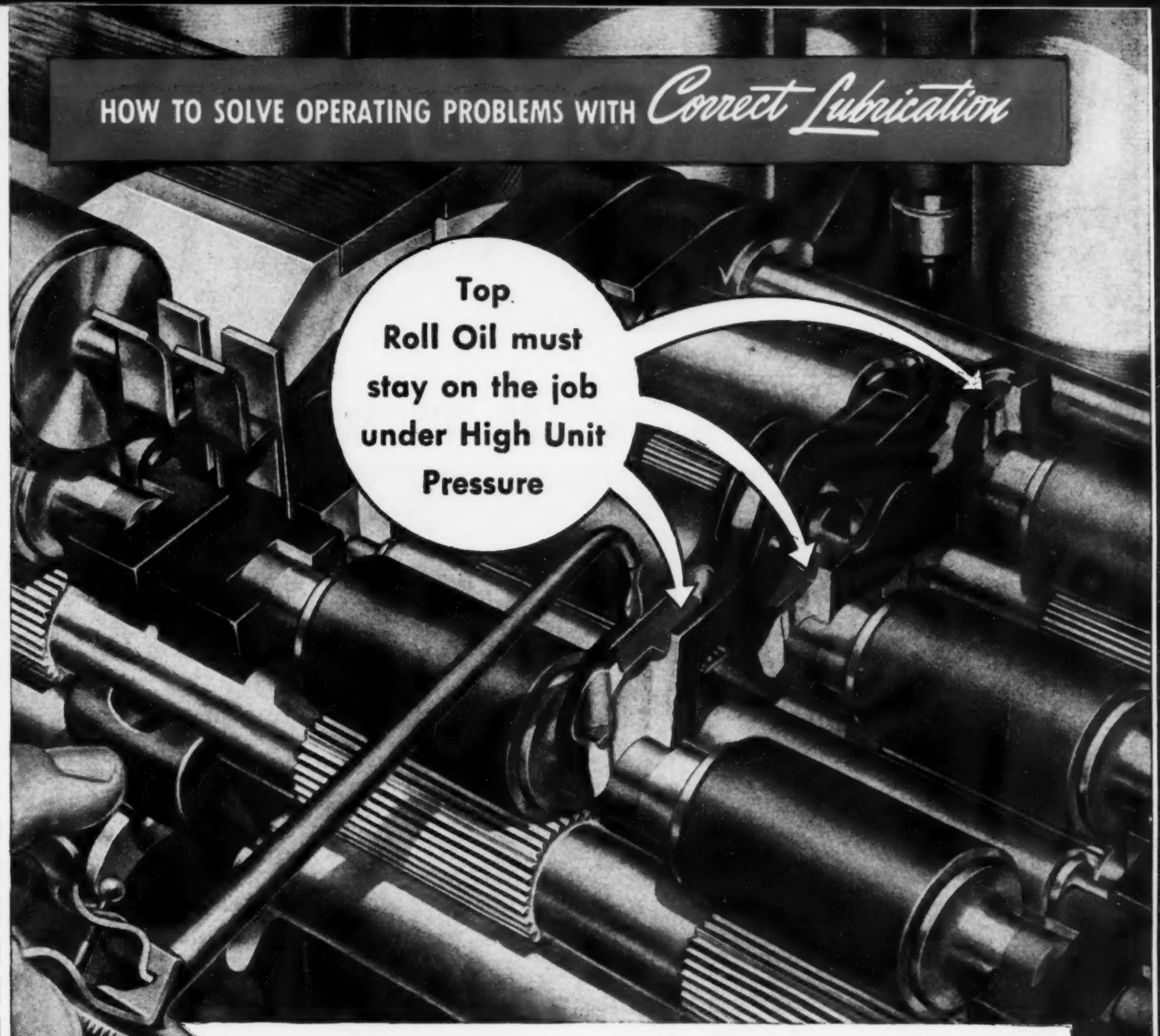
WHITIN MACHINE WORKS

WHITINSVILLE, MASSACHUSETTS, U. S. A.

CHARLOTTE, N. C. ATLANTA, GA.

ONE OF A SERIES OF SUGGESTIONS TO AID PRODUCTION

HOW TO SOLVE OPERATING PROBLEMS WITH *Correct Lubrication*



ONE OF A SERIES OF SUGGESTIONS TO AID PRODUCTION

Put the Right Oil in this Saddle!

THE TINY DROPS of oil that you place in the top roll saddle (pictured above) have a big, important job to do in your spinning department.

Despite extreme high unit pressures between the saddle and the rolls, the oil must stick on the working areas—and not "creep" out to stain the rolls and the yarn passing through them. With minimum feeds, the oil films must persist over long periods of time to reduce friction, power consumption and wear.

In Gargoyle Vactra Oils, many mills have found the answer to this tough top roll problem. These oils are specially made to "stay put" on metal . . . to resist the wiping action of moving parts. During the long intervals between applications, their persistent films resist rupture and wear.

Put Gargoyle Vactra Oils in your top roll saddles for efficient production and economy.

GARGOYLE Lubricants

SOCONY-VACUUM OIL CO., INC., Standard Oil of N.Y. Div. • White Star Div. • Lubrite Div. • Chicago Div. • White Eagle Div. • Wadhams Div. • Magnolia Petroleum Company • General Petroleum Corporation of California.

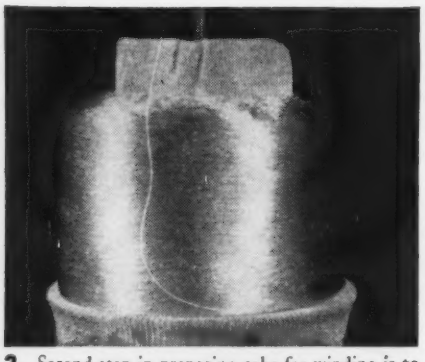
CALL IN SOCONY-VACUUM

RAYON REPORTS

Published Monthly by American Viscose Corporation, New York, N. Y. MAY, 194

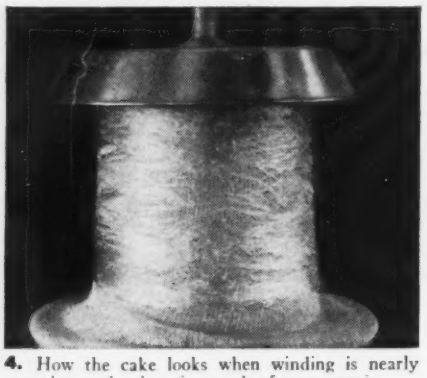
HOW TO PREPARE A CAKE FOR WINDING

1. A cake, with cover intact, is mounted on the cake holder with celluloid insert in place.



2. Second step in preparing cake for winding is to strip back cover.

3. With cover stripped back, pie plate is put in place and cake is ready for winding.



4. How the cake looks when winding is nearly complete and only a few yards of yarn remain.

TEXTILE SCREEN-PRINTERS TURN TO VINYON**

Once again Vinyon yarn steps into the breach, this time to keep the art of textile screen-printing alive.

Vinyon is proving itself an excellent fiber for the precision weaving essential to

printing screens. Aside from its characteristics which make for exceptional uniformity, Vinyon is inert to the action of most acids and alkalis. Because Vinyon fabrics are not swelled or distorted by water or by the solutions used in the process of screen-printing, the resulting printing job is sharp and clean. Design and pattern can be reproduced with utmost fidelity. Moreover, the Vinyon fabric does not deteriorate when screens are stored away for long periods.

RAYON FIGURES IN NEWS FROM FIGHTING FRONTS

Newspaper dispatches from front lines all over the globe indicate how important an aid rayon is to our fighting men.

Frequent references are made to rayon fragmentation bombs dropped from low-flying planes . . . to blast Jap concentrations in the South Pacific . . . to shatter Nazi attacks on the Anzio beachhead.

Other dispatches mention the use of rayon cargo parachutes for supplying troops in advanced or isolated positions. They have been of special value in the Burma, New Guinea and Solomon Island campaigns.

Rayon and rubber self-sealing gasoline tanks are not infrequently referred to by the war correspondents. But because these fuel "cells" have so greatly reduced the hazards of fire in air combat, the lives of countless American and Allied flyers have been saved. These cells are one of the reasons for Allied air superiority in all theatres.

COATERS INTERESTED IN RAYON FABRICS

One of the results of the successful performance of rayon in tire cords is the interest being shown in rayon fabrics by coaters. Prior to the war, the rayon fabric used principally for coating was made of 50 denier viscose and that appeared mainly in the manufacture of shower curtains.

During the past two years, however, coaters have had considerable experience with continuous filament viscose rayon. They prefer it because its greater smoothness and regularity of weave make it easy to coat.

NEW BOOKLET ON NEW USES FOR RAYON AND VINYON**

The American Viscose Corporation is making available an interesting booklet telling how research is developing new uses for Rayon and Vinyon. The story is presented through reprints of a series of the company's institutional advertisements. Copies are available on request. Just write American Viscose Corporation, 350 Fifth Avenue, New York 1, New York.

**T. M.—C. & C. C.

MAKE USE OF 4-PLY SERVICE

1 PRODUCT RESEARCH
Helps you get the right yarn.

2 FABRIC DEVELOPMENT
Helps you design new fabrics.

3 TEXTILE RESEARCH
Helps solve production and finishing problems.

4 "CROWN" TESTED
Helps provide scientific selling facts.

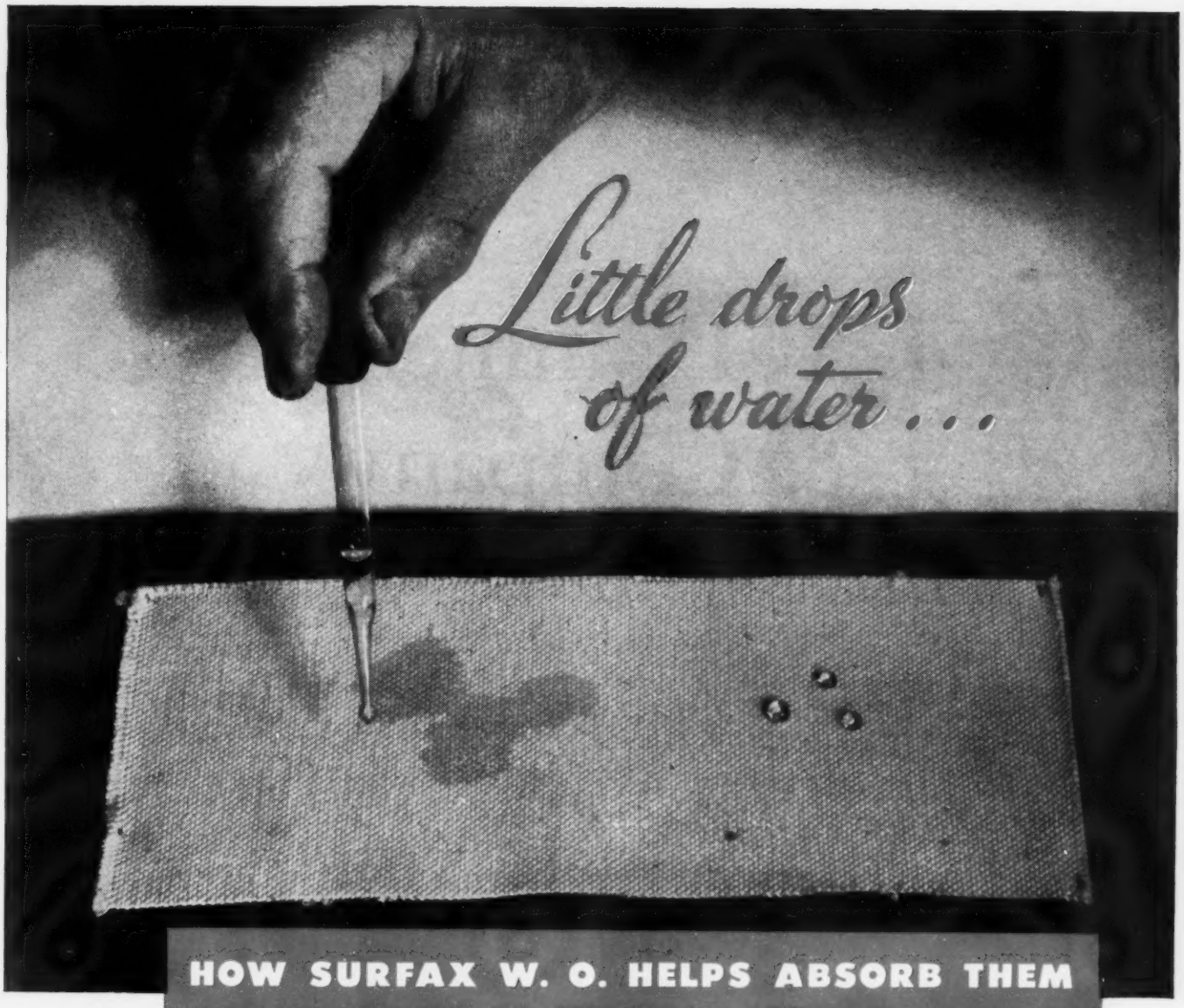
AMERICAN VISCOSE CORPORATION

Producer of
CROWN* *Rayon Yarns and Staple Fibers*

Sales Offices: 350 Fifth Avenue, N. Y. C. 1; Providence, R. I.; Charlotte, N. C.; Philadelphia, Pa.

Plants at: Marcus Hook, Pa.; Roanoke, Va.; Lewistown, Pa.; Nitro, W. Va.; Parkersburg, W. Va.; Meadville, Pa.; Front Royal, Va.

*Reg. U. S. Pat. Off.



HOW SURFAX W. O. HELPS ABSORB THEM —AND FAST!

There's no magic about the above photograph. One-half the cloth was treated with Surfax W. O., the other half not treated. Then drops of spigot water were placed on each side, with the above result.

This ability to absorb water quickly means much in the sanforizing process. Fabric treated with Surfax W. O., then dried, will wet back faster when run through the sanforizing machine. That speeds up production—more yards per minute carefully preshrunk—which is the reason why so many leading sanforizers employ Surfax W. O.

An oil-type surface-active chemical, Surfax W. O. possesses unusual wetting out, wetting back and softening properties. It has fast wetting speed at low concentrations and at elevated temperatures.

In almost all wet processing operations, including sanforizing, you can use Surfax W. O. to excellent advantage. Why not ask the Houghton Man to prove it?

E. F. HOUGHTON & CO.

303 West Lehigh Avenue, Philadelphia 33
1301-05 West Morehead Street, Charlotte 1

SURFAX W.O.

FOR FASTER WETTING BACK

L. F. Dommerich & Company

Executive and General Offices

271 MADISON AVENUE
NEW YORK, N. Y.

Telephone: AShland 4-8650

FACTORS

For Manufacturers and Merchants

Inquiries as to our services solicited

●

ESTABLISHED 1840

SANDOZ PRESENTS *The color achievement of the month*

Piquant Pastels BY DAN RIVER MILLS

Piquant is the word for Dan River's new pastels, a criss-crossed pattern on woven cotton just hatched for the Spring sunshine.

Sandoz, whose products have helped create many a Spring-time color fashionable this year, congratulates both wearer and weaver.

Assisting many famous mills in the processing of textiles, Sandoz' technicians have developed a wide range of specialized chemical compounds for preparing, dyeing and finishing fibres. Our aim: the most attractive appearance, the most uniform wearability, and the lowest operating costs.

For example, a Sandoz-developed mercerizing agent, Mercerol, is known to produce the highest lustre, maximum production, at low cost. Among other chemicals furnished to today's Textile Leaders . . . are Sandozol KB, an especially reliable aid in dyeing . . . and Lubricant S, a new Sandoz-developed synthetic binder for easier slashing.

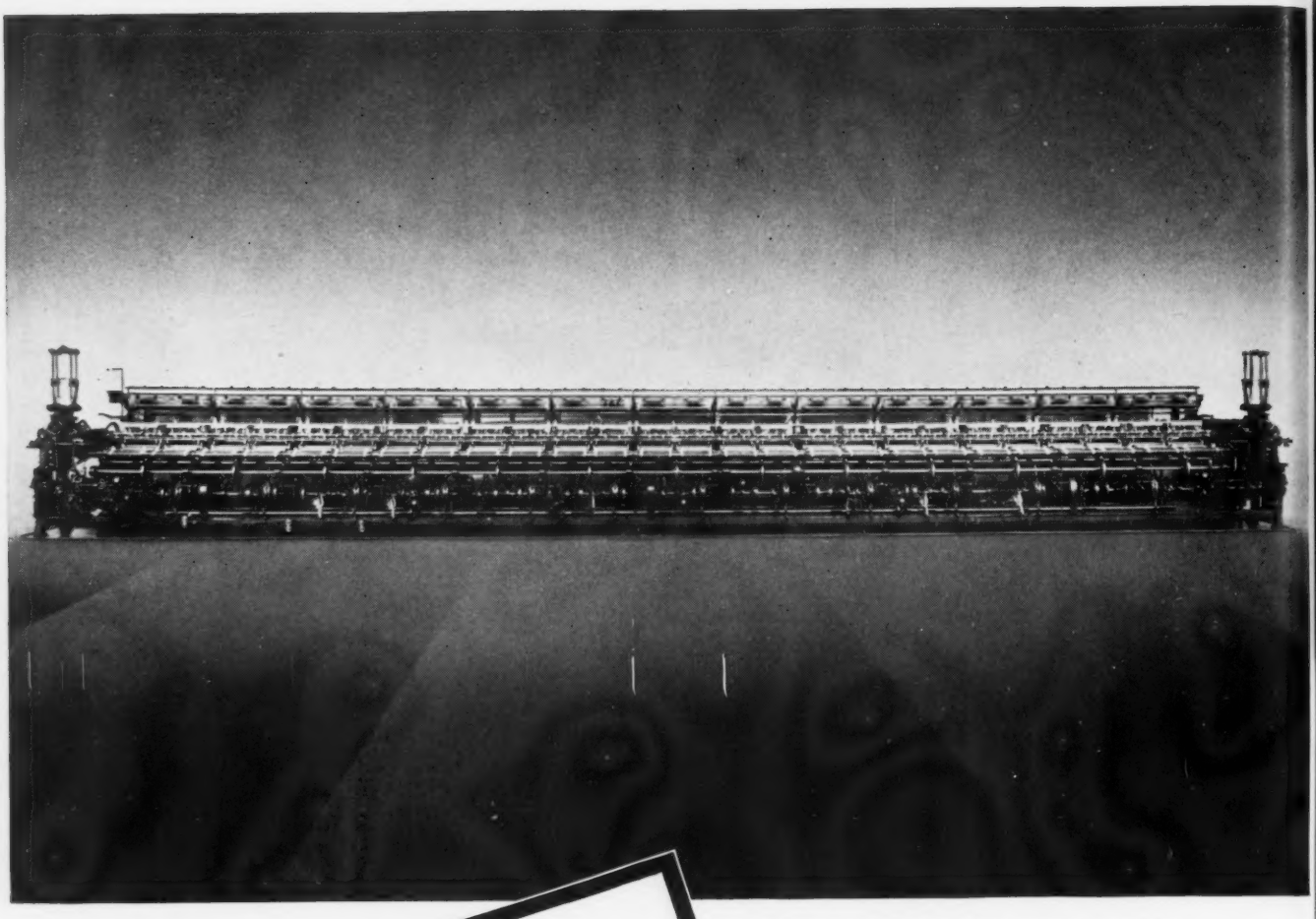
To help you select auxiliary chemicals for specific needs as well as a broad range of acid, chrome, direct and other dyes, Sandoz application laboratories are ready to serve you in New York, Boston, Philadelphia, Charlotte, Los Angeles and Toronto. You will find stocks in those cities. Sandoz branch offices are located in Chicago, Paterson and Providence.

Next month's "Color Achievement" will feature the accomplishment of another Sandoz customer among the leaders of the Textile Industry.

SANDOZ CHEMICAL WORKS, INC., 61 VAN DAM STREET, NEW YORK 13, N. Y.

SANDOZ *thinks ahead with textiles*

SANDOZ



● *Built by* TEXTILE MACHINE WORKS

Revolutions are regular on leggers

SKF

BALL AND ROLLER BEARINGS

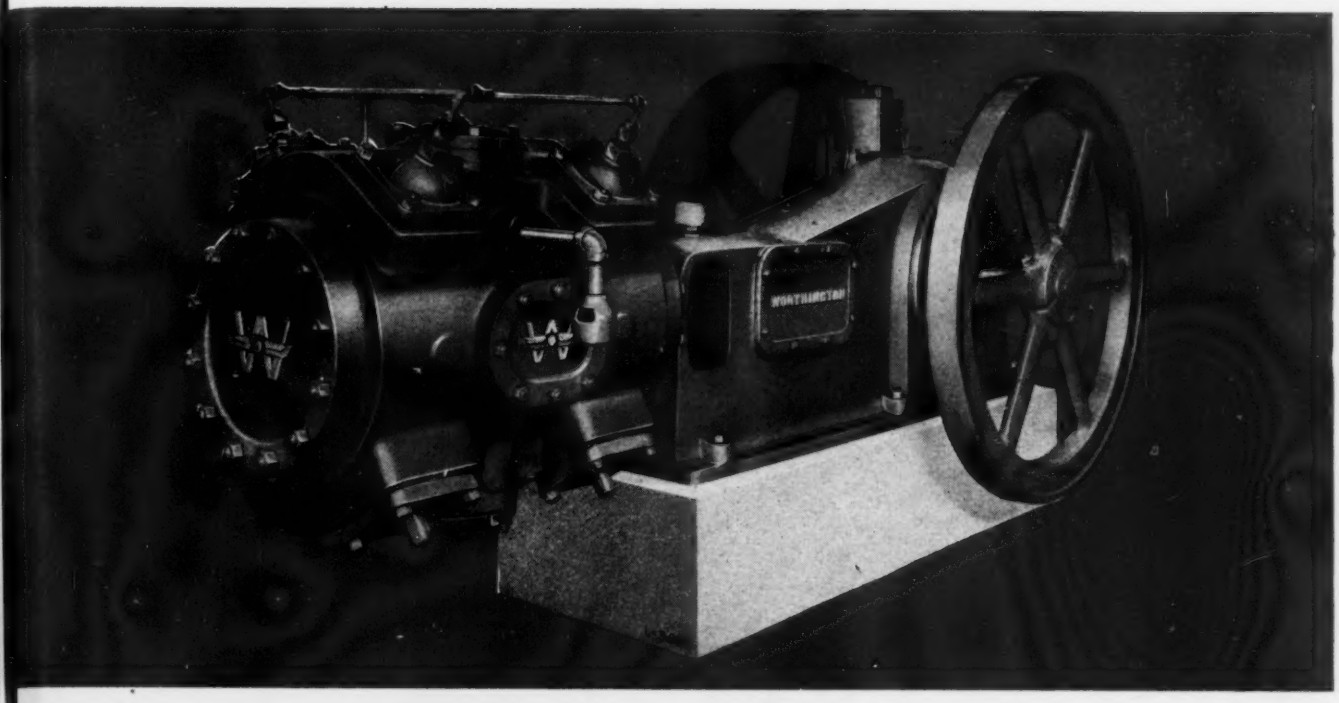
There's no danger of troublesome bearings slowing down the revolutions of the handwheel shaft and disc clutch drive of this 26-Section Full-Fashioned Legger.

The bearings are SKF Self-Aligning Ball Bearings with the ability to compensate for any shaft deflections, distortions or weave. And easily-mounted sleeves permit them to be secured on a straight shaft without shoulders or threads for locknuts.

As a result, every revolution is a study in smooth, continuous running year after year . . . and the high production of leg blanks is a certainty.

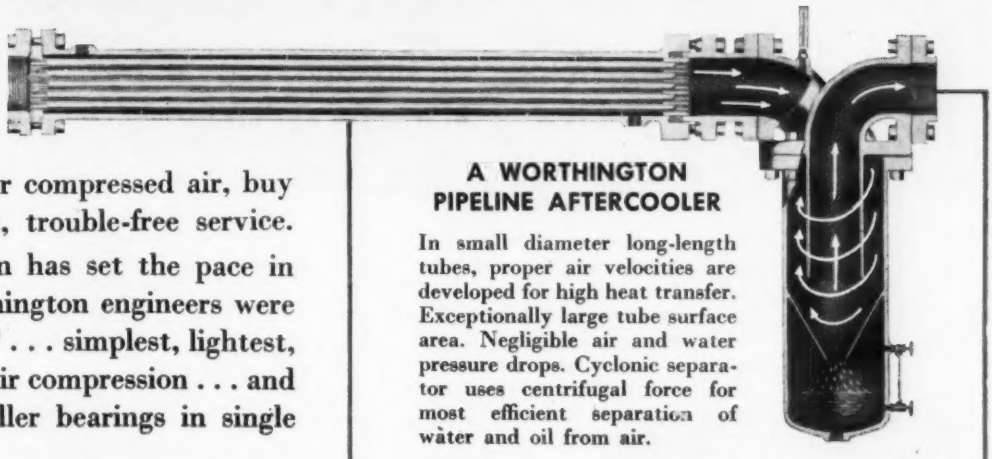
On the machines the textile industry uses to fight the war, you'll find SKF Bearings. 5587

SKF INDUSTRIES, INC. • FRONT ST. & ERIE AVE. • PHILADELPHIA 34, PA.



Compressor BY WORTHINGTON

For Dependable Air at Lowest Cost



A WORTHINGTON PIPELINE AFTERCOOLER

In small diameter long-length tubes, proper air velocities are developed for high heat transfer. Exceptionally large tube surface area. Negligible air and water pressure drops. Cyclonic separator uses centrifugal force for most efficient separation of water and oil from air.

No other compressor will outperform a Worthington

Whatever your need for compressed air, buy Worthington for efficient, trouble-free service.

For years, Worthington has set the pace in compressor design. Worthington engineers were *first* with Feather Valves* . . . simplest, lightest, most effective valves for air compression . . . and *first* with anti-friction roller bearings in single horizontal compressors.

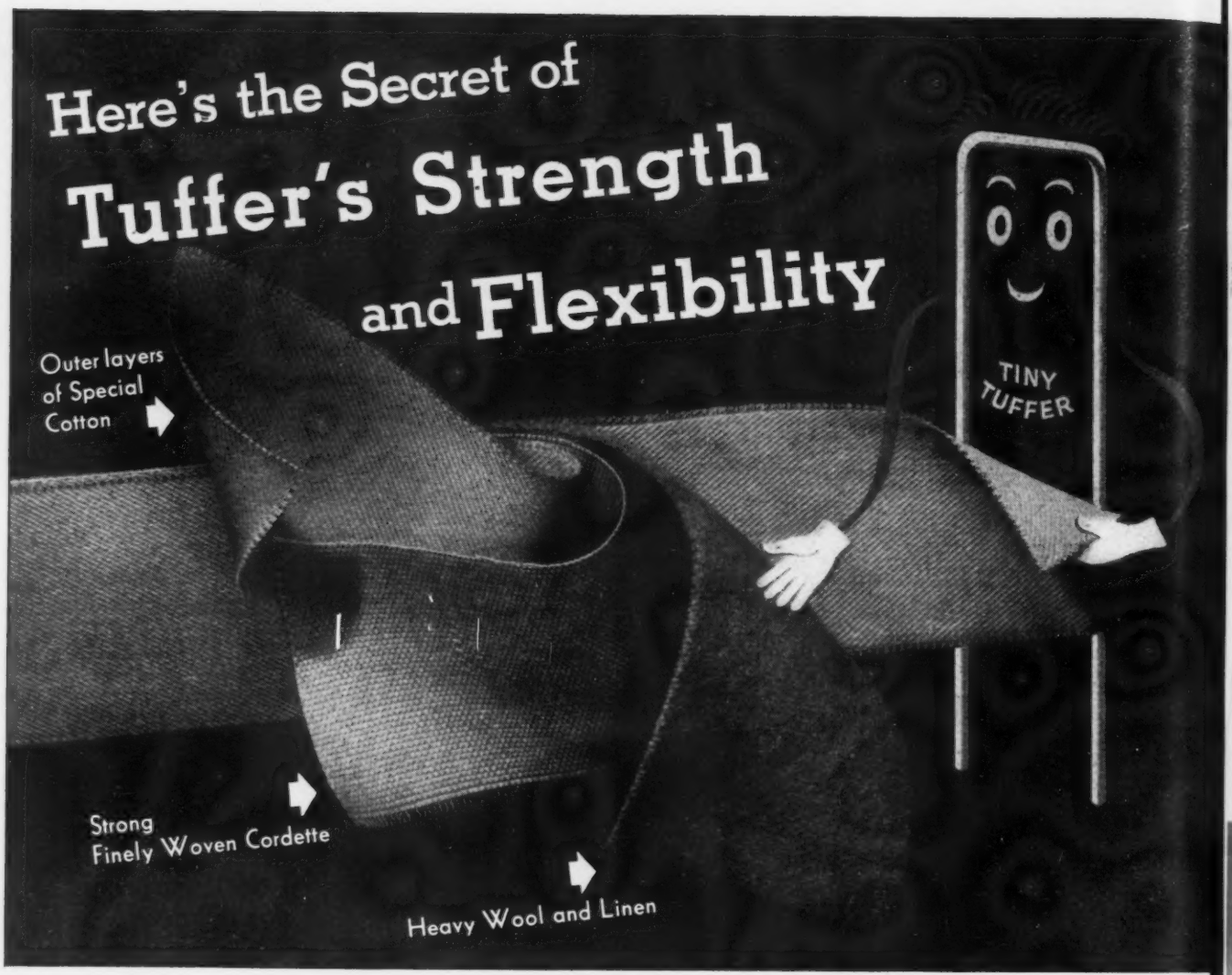
In many cases, in all kinds of manufacturing plants from coast to coast, the type "HB" Worthington Air Compressor shown above has been in operation, without major adjustments, for more than a quarter of a century.

Write for complete data—installation photos—in Bulletin L-640-B1. AC 4-6

*Reg. U. S. Pat. Off.

WORTH BEHIND THE NAME
WORTHINGTON

WORTHINGTON PUMP AND MACHINERY CORPORATION, HARRISON, N. J., U. S. A.



The famous Tuffer foundation, with wires in position, is built to withstand several times the strain it will ever encounter in the card room.

Tuffer foundation is made of cloths especially constructed to Tuffer specifications. Four layers of these strongly woven fabrics are laminated together with special oilproof glue. This makes it strong, stretch-resistant, and yet pliable enough to go on the cylinders easily, and flexible enough to absorb the constant hammering of the stock being carded. Once set, Tuffer stays set because the flat, accurately formed, crowns of the wires allow it to be drawn more snugly to the cylinder.

You can't do better than to standardize on Tuffer products for your card room.

TUFFER CARD CLOTHING

TUFFER PRODUCTS

Card Clothing for Woolen, Worsted, Cotton, Asbestos and Silk Cards • Napper Clothing, Brush Clothing, Strickles, Emery Fillets. Top Flat: Recovered and extra sets loaned at all plants. Lickerins and Garnet Cylinders from 4 to 30 inches and Metallic Card Breast Rewired at Southern Plant • Midgley Patented, and Howard's Special Hand Stripping Cards • Inserted Eye & Regular Wire Heddles

HOWARD BROS. MFG. CO.

WORCESTER, MASSACHUSETTS

Southern Plants: Atlanta, Ga., Gastonia, N. C. **Branch Offices:** Philadelphia, Dallas **Canadian Agents:** Colwool Accessories, Ltd., Toronto 2

EVERYTHING FOR PIPING...

Everywhere!

As specialists in piping supplies, Grinnell maintains completely stocked warehouses in principal cities. You can get materials for any piping requirement from these warehouses or you can buy Grinnell piping products from your local Grinnell jobber.

At each of these nearby Grinnell branches, experienced engineers are ready to assist you in finding the solution to any unusual piping requirement.

Send for catalogs and remember Grinnell "whenever Piping is involved."

GRINNELL COMPANY, INC.
Executive Offices: Providence 1, R. I.

Branches and Warehouses

Atlanta 2, Ga.	Los Angeles 13, Cal.	Providence 1, R. I.
Charlotte 1, N. C.	Minneapolis 15, Minn.	St. Louis 10, Mo.
Chicago 9, Ill.	New York 17, N. Y.	St. Paul, Minn.
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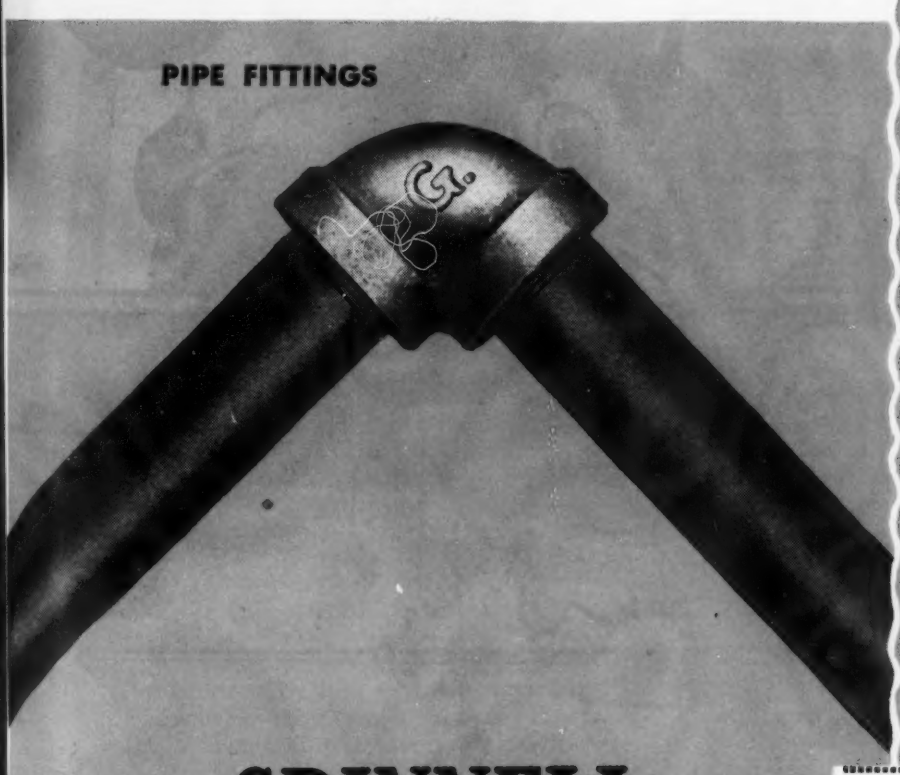
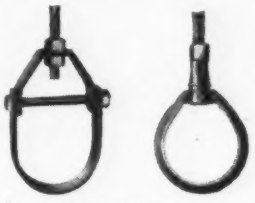


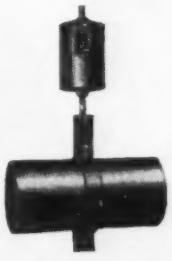
GRINNELL
WHENEVER Piping IS INVOLVED

Cast Iron, Malleable, Bronze and Steel Pipe Fittings



Pipe Hangers

Welding Fittings



Pre-Engineered Spring Hanger

Grinnell-Saunders Diaphragm Valve

Also Pipe, Valves, Specialties for Heating, Water Works, Fire Protection and Pulp and Paper Mills.

Grinnell Company, Inc.
Providence 1, R. I.

Please send copy of Catalog describing Pipe, Fittings....., Pipe Hangers....., Welding Fittings....., Spring Hangers....., Grinnell-Saunders Valves.....

Name ..... Title.....

Company .....

Address .....

.....

*Corrosion

* This is the 10th of a series of informative messages concerning the meaning and significance of commonly used tests and terms employed to describe the characteristics of lubricating oils.

INDUSTRIAL TYCOL OILS-GREASES

OIL IS AMMUNITION
USE IT WISELY !

DRUMS! DRUMS! DRUMS!
War needs make it extremely important that all empty drums be returned immediately.

SCIENTIFICALLY ENGINEERED FOR EVERY INDUSTRIAL USE

TYCOL

TIDE WATER LUBRICANIA

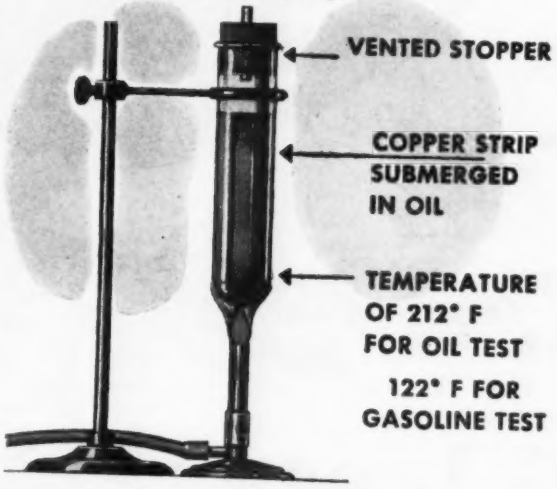
EXPLANATION: Petroleum products are frequently used in contact with metal, and when it is essential that the metal shall not be corroded, it is customary to require that the petroleum products pass an appropriate corrosion test.

TEST: The Copper Strip Corrosion Test as described in "Federal Specifications for Lubricants and Liquid Fuels" indicates the presence of free sulphur or corrosive sulphur compounds in undesirable quantities. It is conducted as follows: A clean strip of mechanically polished pure sheet copper about one-half inch wide and three inches long is placed in a clean test tube. Sufficient of the oil or liquid fuel to be tested is added to cover the copper strip completely. The test tube is closed with a vented stopper and maintained at a temperature of 212° F. for 3 hours. (If gasoline is being tested, then the temperature is held at 122° F. to avoid loss of product by distillation). The copper strip is then rinsed with sulphur-free acetone and compared with a similar strip of freshly polished copper.

The presence of free sulphur or corrosive sulphur compounds is indicated by the corrosion or discoloration of the test strip.

The sample does not "pass" the test if the discoloration of a freshly polished copper strip becomes opaque or if pitting is caused on any portion thereof. A slight discoloration is generally accepted as "passing" the test.

SIGNIFICANCE OF TEST: The Copper Strip Corrosion Test is an extremely sensitive test for indicating the presence of free sulphur or corrosive sulphur compounds in an oil. This test will detect concentrations of free sulphur as low as .001%. Variations in color of the copper strip may occur through a whole range of color shades with greens and reds predominating. Certain of these colors result from other reaction products than those caused by sulphur. These compounds may in no way be detrimental, and this fact should be taken into consideration when using this test to pass on the corrosive properties of an oil. Free sulphur colors the copper strip "black." The Copper Strip Corrosion Test is a desirable test for control of refining processes on certain types of petroleum products such as gasoline, Diesel fuel, Hypoid and All-Purpose Gear Lubricants, cutting oils and the like. It may also be used in the field for determining if sulphur compounds are present in certain oils containing additives when an active sulphur ingredient is necessary.



Tycol lubricants are made in a comprehensive line to meet each specific service requirement. Their repeatedly-proven ability to assure outstanding performance is the result of modern scientific manufacturing and rigid testing. Tide Water engineers will recommend the Tycol lubricant exactly suited to your needs – thus assuring truly efficient and economical lubrication.

TIDE WATER ASSOCIATED OIL COMPANY

MAKERS OF THE FAMOUS VEEDOL MOTOR OIL • Eastern Division: 17 Battery Place, New York 4, N. Y.

Principal Branch Offices: Boston, Philadelphia, Pittsburgh, Charlotte, N. C.

INDUSTRIAL LUBRICANTS

It's G.I. now – but just wait . . .

Many a strand of rayon yarn is jouncing along some craggy Italian road, or landing on some British airfield, that a few years ago would have seen no more active life than comes with being part of a dress, or a suit of clothes.

For the rayon yarn produced by Industrial's new and exclusive "Continuous Process" is so uniform, so strong, so free of knots and broken filaments, as to lend itself perfectly to the making of tire cord for tires that must stand the gaff of high speeds, rough going and terrific impact. Once the war is won, this yarn known as *TYRON will be widely used by the tire industry.

For the thousand and one additional needs of a nation at peace, this same high-quality yarn, in textile sizes, will be available under the famous name—*Spun-lo

Keep your eye on * TYRON and on *Spun-lo. They're part of the textile tomorrow.

*Reg. U. S. Pat. Off.

Industrial
RAYON CORPORATION
MAKERS OF
"CONTINUOUS PROCESS" RAYON YARN
AND Spun-lo KNIT UNDERWEAR CLOTH

CLEVELAND, OHIO • New York Office, 500 Fifth Avenue

5 WAYS BETTER than Other Reversible Drop-Box Pickers

1. Composition harder around spindle rod. No oil required.
2. Softer composition at picker stick contact for proper cushion to shuttle point.
3. Special composition at shuttle contact eliminates shuttle point loosening.
4. Perfect throw to shuttle throughout life of picker.
5. Tailored to fit. No reaming out of hole or other alterations.

NO PRE-AGING OR DIPPING

DAYTON'S 5-POINT EXCLUSIVE CONSTRUCTION SOLVES OLD PICKER PROBLEMS

These remarkable Dayton Reversible Drop-Box Pickers are definitely different in the way they are made and in the service they give. Each picker is a complete, precisely engineered unit with special compositions molded in at the points they are needed. The result is that Daytons reduce costly delays and replacements—and help you to get faster, cleaner production.

Many leading operators have already adopted Dayton Reversible Drop-Box Pickers as standard in their mills. The sooner you try them the quicker you will get rid of your old picker troubles. They truly typify the Technical Excellence which is in all Dayton Rubber textile products. Write for the full facts or get in touch with your nearest Dayton Rubber distributor.

THE DAYTON RUBBER MFG. COMPANY
DAYTON 1, OHIO WAYNESVILLE, N. C.
Main Sales Office ..... Woodside Bldg., Greenville, S. C.

MAINTAIN VICTORY SPEEDS—CONSERVE YOUR TIRES

DAYTON DE LUXE LOOP PICKERS

Sure to reduce shuttle costs.
They keep their shape and "stay put" on the stick.
Approximately twice as strong as others and easier to install.

Pickers by Dayton Rubber

REG. TRADE MARK THE DAYTON RUBBER MFG. CO.

The Mark of Technical Excellence in Synthetic Rubber

A Key to BETTER MAINTENANCE

Day and night operation, excessive wear, and today's replacement difficulties demand *better maintenance* of equipment.

A key to better maintenance is *better lubrication.*

Sinclair offers lubricants highly specialized for top efficiency on *TEXTILE MACHINERY* in continuous operation.

Lily White Oils are designed to take care of all spindle speeds and package loads. They provide low temperature running, non-vibration, and reduction of power loss in heavy duty service.

No-Drip Lubricants have qualities that make them highly desirable for loom, cam, top roll, and comb box lubrication, especially resistant to creeping and spattering.

Bearing Grease AF was developed in cooperation with bearing manufacturers for high efficiency. It possesses rare qualities of water solubility and neutral color required in many textile services.

Where top speeds in continuous operation are threatening shorter life for motors, mechanical drives and all types of moving parts, Sinclair lubricants make for *better maintenance.* Consult us about your lubrication problems.

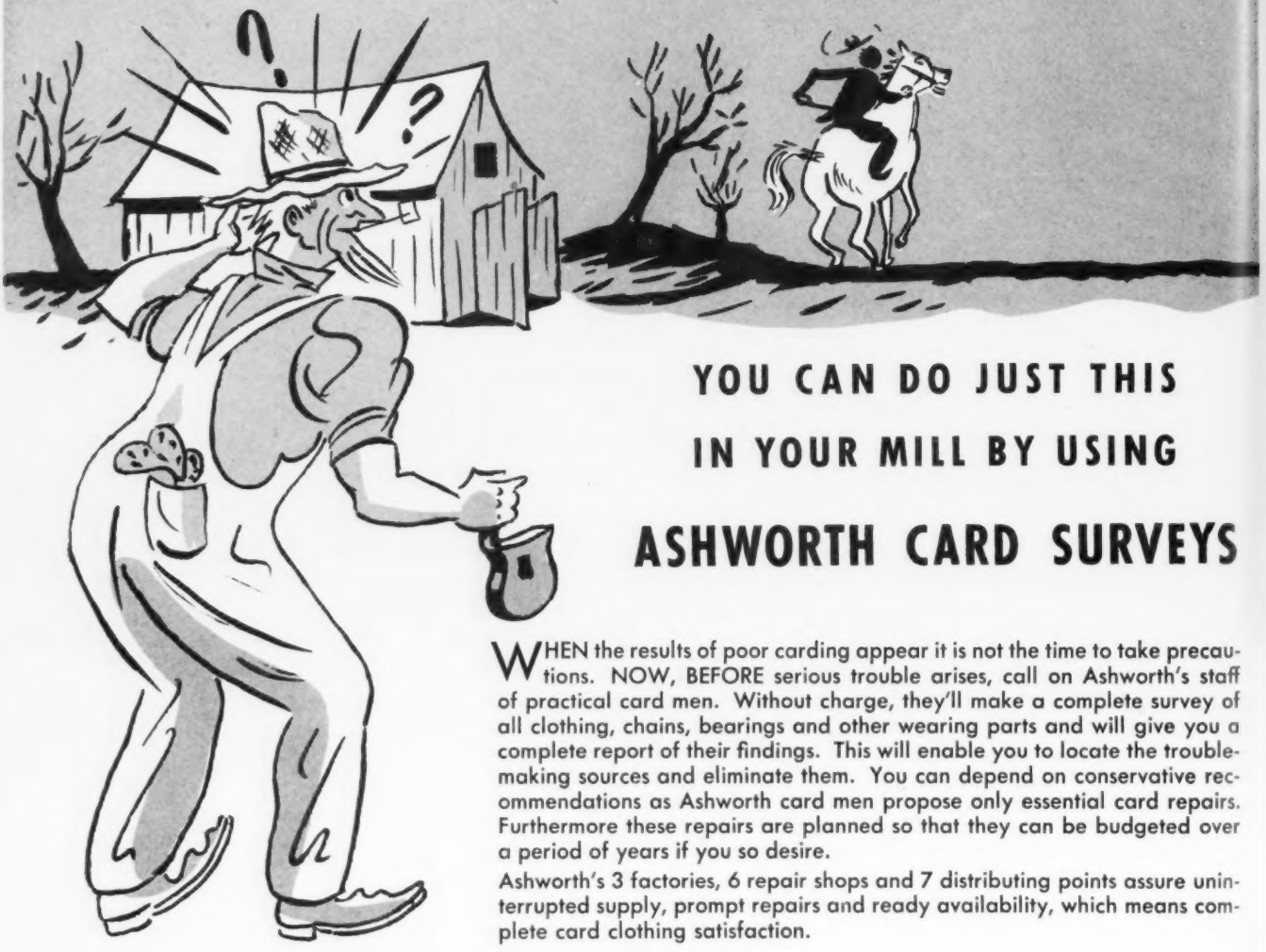
(Write for "The Service Factor" — published periodically and devoted to the solution of lubricating problems.)

SINCLAIR TEXTILE LUBRICANTS

FOR FULL INFORMATION OR LUBRICATION COUNSEL WRITE SINCLAIR REFINING COMPANY (INC.), 630 FIFTH AVENUE, NEW YORK 20, N. Y.

A 4 IN 1
COLORED YARN
SERVICE
IT DISTRIBUTES RESPONSIBILITY
WITHOUT SACRIFICING
UNIFORMITY
Loading an Extractor in A Franklin Process Dye Plant
Franklin Process has four yarn dyeing plants. No matter which plant takes your order, it will be filled by the one which can serve you best. In reality then Franklin Process customers have four sources of supply in one. They are not dependent on one plant alone, but they do not run the risk of a variation in quality. All Franklin Process plants use the same formulas for standard shades, the same dyeing process and the same yarn suppliers.
OTHER ADVANTAGES OF FRANKLIN PROCESS SERVICE ARE AS FOLLOWS—
1 You benefit from both special and general experience:—special because each plant specializes in serving one or more branches of the textile industry; general because the experience of one plant becomes the experience of all through our "shuttle system",—exchange of information.
2 We can supply yarn as well as dyeing, accepting full responsibility for the finished product.
3 We dye by the original Franklin Process, which has revolutionized yarn dyeing.
4 We offer not only the largest package dyeing capacity in the world, but also the largest dye batches in the industry; we can handle large or small orders equally well.
Franklin Process
LARGEST PACKAGE DYERS IN THE WORLD
Providence • Philadelphia • Greenville
Chattanooga • New York Representative,
40 Worth Street • Chicago Representative,
100 West Monroe Street

The Idea Is... TO LOCK THE BARN BEFORE THE HORSE IS STOLEN!



YOU CAN DO JUST THIS IN YOUR MILL BY USING

ASHWORTH CARD SURVEYS

WHEN the results of poor carding appear it is not the time to take precautions. NOW, BEFORE serious trouble arises, call on Ashworth's staff of practical card men. Without charge, they'll make a complete survey of all clothing, chains, bearings and other wearing parts and will give you a complete report of their findings. This will enable you to locate the trouble-making sources and eliminate them. You can depend on conservative recommendations as Ashworth card men propose only essential card repairs. Furthermore these repairs are planned so that they can be budgeted over a period of years if you so desire.

Ashworth's 3 factories, 6 repair shops and 7 distributing points assure uninterrupted supply, prompt repairs and ready availability, which means complete card clothing satisfaction.

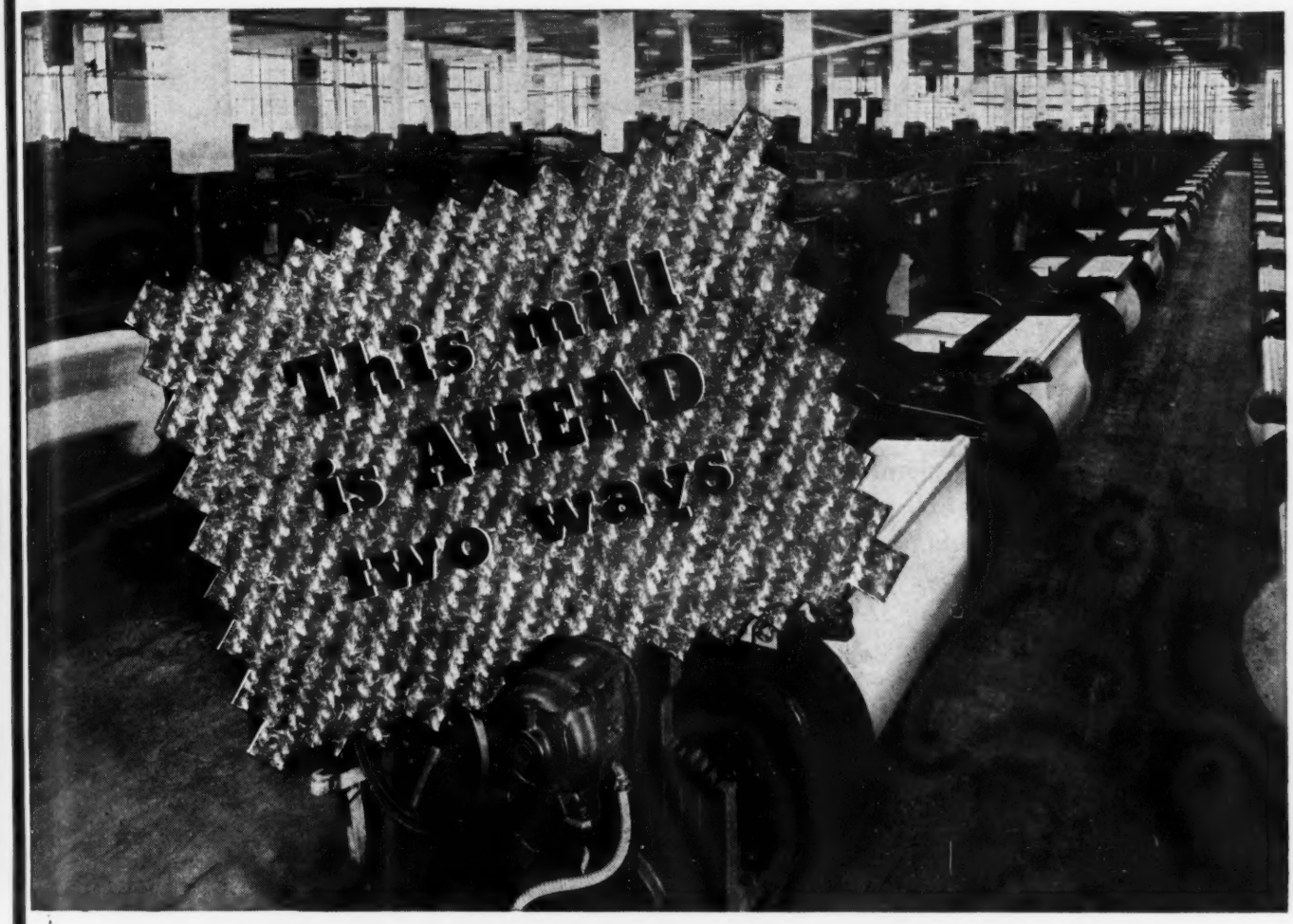
ASHWORTH BROS., INC., Woolen Div., AMERICAN CARD CLOTHING CO.

FALL RIVER *†‡ WORCESTER *‡ PHILADELPHIA *†‡ CHARLOTTE †‡ GREENVILLE †‡

ATLANTA †‡ DALLAS †‡ (Textile Supply Co.)

**Factory • †Repair Shop • ‡Distributing Point*

PRODUCTS AND SERVICES: Card Clothing for Cotton, Wool, Worsted, Silk and Asbestos Cards and for all Types of Napping Machinery • Brusher Clothing and Card Clothing for Special Purposes • Lickerin Wire and Garnet Wire • Sole Distributors for Platt's Metallic Wire • Lickerins and Top Flats Reclothed.



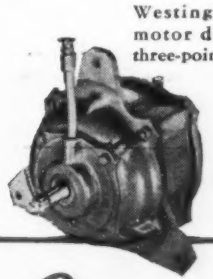
Under today's high-pressure production, reduced maintenance is an important factor—both from the standpoint of money saved as well as time saved. This is one way this mill is ahead. With Westinghouse loom motors on the job, maintenance is held at a minimum. These motors have been built to resist the heavy vibrations encountered in loom service. Mechanical strength is greater—life longer.

Power costs, too, are lower with Westinghouse Loom Motors. They are designed for exceptionally high efficiency. Proper relation of rotor weight helps "iron-out" some of the peak loads occurring at high frequency in loom drives. This results in greater overall efficiency and low power cost.

Plan now to use this motor on your new postwar looms. With its sturdy construction, you can be sure of meeting the heavy strains imposed by new looms before they are "broken in". Vibration can't "lick" this loom motor. Ask your Westinghouse representative to give you all the facts. Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa. J-94616

MANY ASSEMBLY COMBINATIONS

Westinghouse loom motors are particularly adaptable for special applications. There are many possible variations in assembly arrangements including three-point suspension, left and right-hand applications, base mounted, and many others. They can be supplied for all types of special mountings or lubrication requirements.



Westinghouse loom motor designed for three-point suspension.

Westinghouse
PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE

Loom Motors

13 Colors NOT RESTRICTED!

A wide range of Aridye* pigment colors can be supplied under M-103. In addition, there are 13 extremely lightfast colors that are still available *without any restrictions!*

The following colors are particularly suitable for use on dress goods and draperies, especially where extreme lightfastness is desired:

PRINTING COLORS FOR USE IN EMULSION SYSTEM

Yellow FYK—a burnished gold shade—will withstand 300 hours in Fadeometer.
Yellow FY3K—a slightly darker yellow—will withstand 300 hours in Fadeometer.
Brown FWR—a bright red-shade brown—will withstand 300 hours in Fadeometer.
Green FJ2K—a bright yellow-shade green—will withstand 100 hours in Fadeometer.
Black FK—a dense black—will withstand 300 hours in Fadeometer.

The regulated consistency of these colors and their ability to wet quickly both engraving and fibers assure a sharp, uniform mark and exact reproduction of engravings.

PRINTING COLORS FOR USE IN WATER SYSTEM

Aridye SX colors are designed for use in any aqueous system. They are now being used for the printing of dress goods and marquisette curtains and to add color value to mineral dye baths.

SX Yellow K—a burnished gold shade—will withstand 300 Fadeometer hours.
SX Brown R—a bright red-shade brown—will withstand 300 Fadeometer hours.
SX Green 2K—a bright yellow-shade green—will withstand 100 Fadeometer hours.
SX Black K—a dense black—will withstand 300 Fadeometer hours.

FOR USE IN CEGLIN†

Aridye CX colors are especially formulated for use in Ceglin, a cellulose finish which, in addition to serving as a binder for the pigments, provides shrinkage control and slippage resistance. Marquisette curtain goods and knitted cotton fabrics can be dyed faster to light than heretofore, shrinkage can be controlled and the goods finished *all in one continuous operation*. The restriction-free CX colors are identical in shade and lightfastness to the "water system" colors listed above.

Since these Aridye colors are immediately available they may help to simplify your problem of supply. For strike-offs or detailed reports of their fastness properties, write today to Aridye Corporation, a subsidiary of Interchemical Corporation, Fair Lawn, New Jersey.

Aridye Corporation is a sales agent for Ceglin

*Reg. U. S. Pat. Off. Aridye Corporation
†Reg. U. S. Pat. Off. Sylvania Industrial Corporation

Aridye TEXTILE COLORING MATERIALS

ARIDYE CORPORATION • SUBSIDIARY OF INTERCHEMICAL CORPORATION • FAIR LAWN, N.J. • ROCK HILL, S.C. • PROVIDENCE, R.I.

ALOYCO STAINLESS STEEL VALVES

NOW AVAILABLE FOR PRESSURES UP TO 600 LBS.

The varied and increasing demands of war industries have greatly quickened the development and application of all-stainless-steel valves. To supply the need for Aloyco Valves for high pressure service, for instance, we are now producing them for pressures up to 600 p.s.i.

Although we have been compelled to increase our output substantially, the high quality of Aloyco Stainless Steel Valves has been maintained in every detail of design, materials selection, foundry practice, machining, assembling and testing. There has been no "easing" of standards at any point to attain quantity production.

Aloyco Stainless Steel Valves and Fittings are available now for installations on high priorities and for maintenance and repairs under M.R.O. regulations. Send today for full information.

ALOYCO

Stainless Steel VALVES and FITTINGS

GATE VALVES • GLOBE VALVES
Y VALVES • CHECK VALVES
LEVER THROTTLE GATE VALVES
TANK VALVES • SCREWED FITTINGS
FLANGED FITTINGS
GAUGE GLASS FITTINGS

Alloy Steel Products Company, Inc., 1304 West Elizabeth Avenue, Linden, N. J.

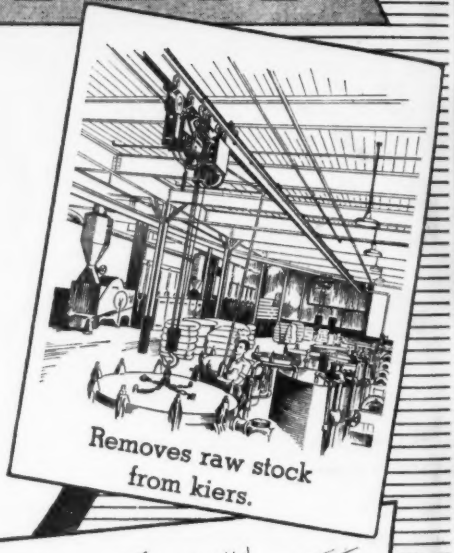
Crane permits compact loom arrangement.

Carries laps from pickers to cards.

Ideas FOR POST-WAR PRODUCTION

Here are several American MonoRail installations which have proven successful in low cost handling. Any plans for postwar production should include such handling methods.

Regardless of the size or type of application, American MonoRail Engineers can help. Their specialized experience often uncovers hidden possibilities for simple systems that bring immediate returns. Consultation with these men is available without obligation. Write for copy of Bulletin C-1 showing a wide range of installations.



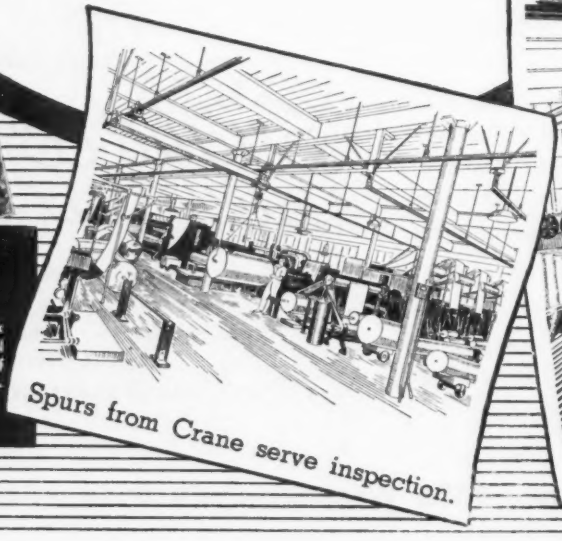
Removes raw stock from kiers.

THE AMERICAN MONORAIL CO.

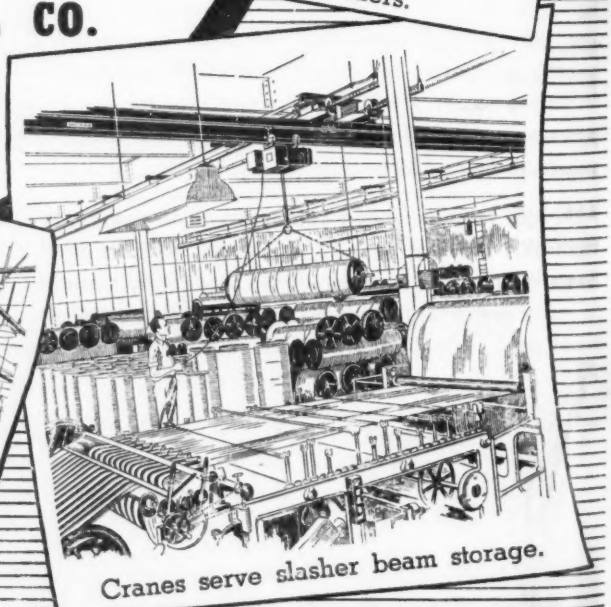
13108 ATHENS AVENUE • CLEVELAND 7, OHIO

SEND FOR BULLETIN C-1

A 56-page book showing successful applications of American Mono-Rail Systems.



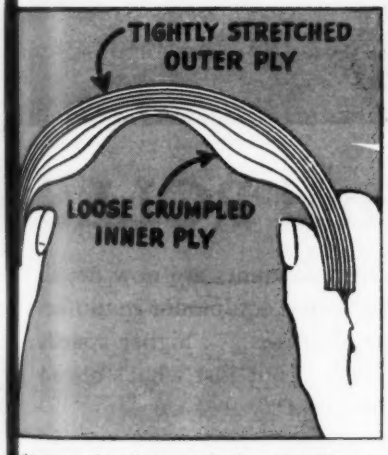
Spurs from Crane serve inspection.



Cranes serve slasher beam storage.

MANHATTAN'S COMPENSATION PRINCIPLE

—with its fatigue-relieving Strength Members—
gives you longer belt life, more power at the Point of Production



this yourself to illustrate what happens when r belts lack Compensation. A pad of paper, d firmly and bent has buckling sheets on the de of the curve. This shows lack of equal ions and illustrates why the plies of con- tional belt "bootleg."

The Compensation Principle makes every ply work under equal stress—and prolongs the life of belts made from today's synthetic rubbers. You no longer need penalize your production by constant alternating of "stretch and buckle" stresses which, in ordinary belt, cause ply rupture as the belt goes round the pulley. Look at the diagram below which illustrates the difference between ordinary belt and Compensated Belt behavior under curve load. Note how Compensation—a patented and exclusive MANHATTAN development—*equalizes ply stresses*, prevents these destructive alternations of "stretch and buckle." Note how smoothly and uniformly the Compensated plies flex around the curve—providing fatigue relief for "war" rubber.

The amazing service you get is the result of MANHATTAN'S specially designed Strength Members so laid in FLEXLASTICS* that you get a truly Compensated Construction—flexible, longer-lived, with high overload capacity and capable of running over smaller pulleys without danger of ply separation or rupture of outside plies.

This principle of Compensation was developed for Condor Compensated Transmission Belt but is now also incorporated in MANHATTAN Conveyor Belts to increase service life where small end pulleys are used.

Users report 3 to 4 times longer fastener life. A paper mill reports a 9-year-old Compensated Belt "still performing like new." "100% more starting load capacity without appreciable belt slip," is still another comment.

Compensate yourself three ways—safeguard production, get longer belt life, increase power transmission efficiency with this revolutionary Compensation Principle in MANHATTAN Belts.

The term FLEXLASTICS is a MANHATTAN Trade Mark. Only MANHATTAN can make FLEXLASTICS.

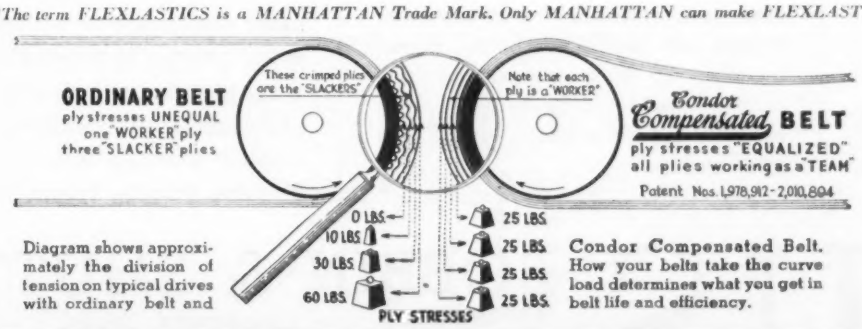


Diagram shows approximately the division of tension on typical drives with ordinary belt and

Condor Compensated Belt. How your belts take the curve load determines what you get in belt life and efficiency.

BONDS—buy more to bring the boys down the home stretch.

EP AHEAD WITH MANHATTAN

THE MANHATTAN RUBBER MANUFACTURING DIVISION
of RAYBESTOS-MANHATTAN, INC.
EXECUTIVE OFFICES PASSAIC, NEW JERSEY

Y, 1944

Four Reasons Why it pays to consult U S

MILL-WISE REPRESENTATIVES. U S representatives cover every field of textile production, and can offer thoroughly experienced advice on the use of U S products in any process.

AMPLE PLANT CAPACITY. Five manufacturing plants, in North and South locations closely keyed to textile production areas, are fully equipped to handle any size orders.

CONTROLLED RAW MATERIALS. Extensive U S owned timber properties allow close control of raw material selection and processing from the source.

PRECISION STANDARDS. U S has cooperated with textile machinery manufacturers for 86 years—can meet the closest possible limits of tolerance in all tests for dimensions, weight, and balance.

U S CONES and ROLLS

The plans for post-war winding improvements are now developing on the drawing boards of progressive equipment manufacturers. Some details can already be glimpsed . . . higher speeds . . . larger packages . . . multiple creels . . . but just what's ahead won't be revealed until after "reconversion".

Ready, at that time, will be U S winding cones and rolls precisely designed to meet the new conditions and standards. U S designers have always worked closely with winding specialists, contributing their "know-how" to the continuing effort to produce better, lower cost winding equipment.

The cork cone is a significant U S "first". Developed in cooperation with the equipment manufacturer, U S cork cones have the extra endurance to withstand the punishing stresses of the high speed process in which they are used.

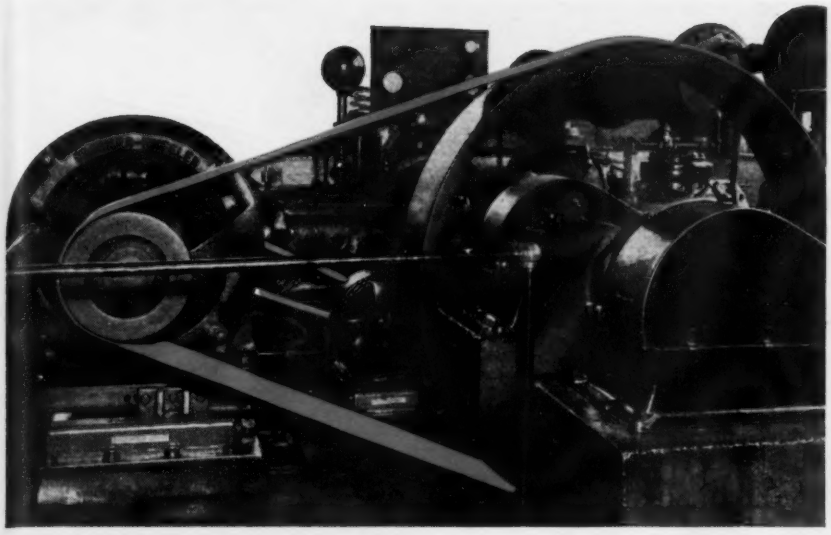
Ready *now*, to help you overcome today's plentiful production problems, are U S mill-wise representatives, in every textile area. Consult them on any question involving Cones, Rolls, Bobbins, Shuttles, Spools, Tubes, and other U S products.

U S BOBBIN & SHUTTLE CO.

PROVIDENCE, R. I.
GREENVILLE, S. C.
CHICAGO AGENT:
Albert R. Breen,
20 E. Jackson Blvd.

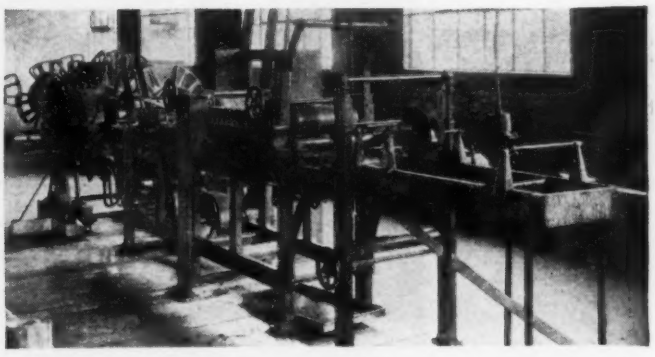
LAWRENCE, MASS.
CANADIAN AGENT:
W. J. Westaway
Montreal, Que. — Hamilton, Ont.

JOHNSON CITY, TENN.
CHARLOTTE, N. C.
ALABAMA AGENT:
Young & Vann Supply Co.
Birmingham



These drives, utilizing the advantages of pivoted bases and "Research" Leather Belting's *Double Plus,* are typical. Installed June, 1940, they have required no attention since. Near belt, 14" "Research" double, 25½' long, drives 72" compressor pulley from 17½" pulley on 100 KVA synchronous motor (900 RPM). 4" "Research" double, 10' 11" long, drives 7½" pulley on exciter from 12" motor pulley.

No substitute can equal THIS... for trouble-free performance



The material with the best *natural* power transmission properties is leather—due to its unique fibrous structure. The science of *chemistry* develops those properties to give leather belts (among other advantages) unusual resiliency, protecting against undue strain on belt or equipment. Thus, leather retains its power-transmitting ability longer.

The leather belt providing longest trouble-free service is Graton & Knight's "Research". Among several manufacturing advantages is *Tension-Cementing*—a G&K-patented development that provides mechanical perfection *not obtainable by any other means* in cementing plies. "Research" has the most uniformly high adhesive strength ever obtained in belting.

Extra Values from "Research" Belting's

"DOUBLE PLUS"

(all that's *better* in leather made *best* in "Research")

- **MORE PRODUCTION** with leather belts because of leather's superior traction, which improves with age.
- **MOST PRODUCTION** with "Research" because "Research" processing adds extra pulley grip. 3% more production guaranteed.
- **LESS MAINTENANCE** with leather belts because natural "give-and-take" handles shocks without undue strain.
- **LEAST MAINTENANCE** with "Research" because prestretching removes non-elastic stretch, saving take-ups.
- **LONGER LIFE** with leather belts because leather's tough, interlocking fibres have high resistance to both surface wear and internal friction.
- **LONGEST LIFE** with "Research" because the prestretched fibres are properly lubricated by precise, "weight-controlled" currying.

3% MORE PRODUCTION . . . 2 TO 4 TIMES LONGER LIFE . . . FROM "RESEARCH" BELTING'S DOUBLE PLUS

MORE UNIFORM results can be expected from "Research" Belting because it is manufactured from green hide to finished product under one roof, under one control, in the world's largest industrial leather plant.

For pivoted base drives: flat leather belts
The free booklet tells why

GRATON AND KNIGHT

"RESEARCH" BELTING

Graton & Knight Company, Worcester 4, Mass.

Branches and distributors everywhere. Look under "Graton & Knight" in "Belting" section of classified telephone directory or THOMAS' REGISTER.

Titterton Has a Knack for Finding Lost Records

It's doubtful if any business would go to such extremes just to keep track of records! But if record transmittal is not properly systematized . . . if records do not reach the right people at the right time . . . both efficiency and production suffer.

Uarco forms do double duty in keeping business records efficient. First, they speed production by making sure that every interested person has complete and accurate information at any given moment. Secondly, they eliminate waste effort in preparing records—keep fuss and bother at a minimum.

Uarco forms are designed either for hand written use or for machine written use. May be carbon interleaved or non-interleaved; may be used in Uarco Autographic Registers or in a typewriter, billing machine or tabulating machine. Uarco forms are especially designed to speed the flow of work by simplifying the tedious job of making and keeping records.

For your particular record problem, Uarco has a solution. With 50 years of business record experience, Uarco can offer you the most up-to-date assistance. It will cost you nothing to have a Uarco representative call today.

UNITED AUTOGRAPHIC REGISTER COMPANY
Chicago, Cleveland, Oakland • *Offices in All Principal Cities*

"WE LOOK FOR *Uniformity that is Apparent* IN KNIT UNDERWEAR"

SAYS MR. W. H. DALTON,
DIRECTOR OF MERCHANDISING,
JOHN DAVID, N. Y. C.

"In men's knitted underwear, the uniformity of the knitting is quickly apparent to the average consumer. With the yarn situation today, and the manpower problem as it is, a manufacturer cannot afford any but the best in equipment."

And that goes for needles, too. To achieve knitting quality and uniformity that is apparent to the average consumer and commands his approval calls for the use of the best needles you can buy. The best needles are the most economical also. That is why leading mills insist today more strongly than ever on Torringtons—the *machine-made* needles with the machine controlled uniformity of finish, temper and dimensions.

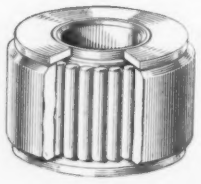
TORRINGTON *Latch Needles*

THE TORRINGTON COMPANY, Torrington Conn., U. S. A.
Established 1866
Branches: New York • Philadelphia • Chicago • Greensboro, N. C.
Boston • St. Louis • Toronto, Canada

All These Needle Bearings are Quickly and Easily Installed

TYPE DC

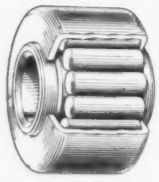
TYPE FDT



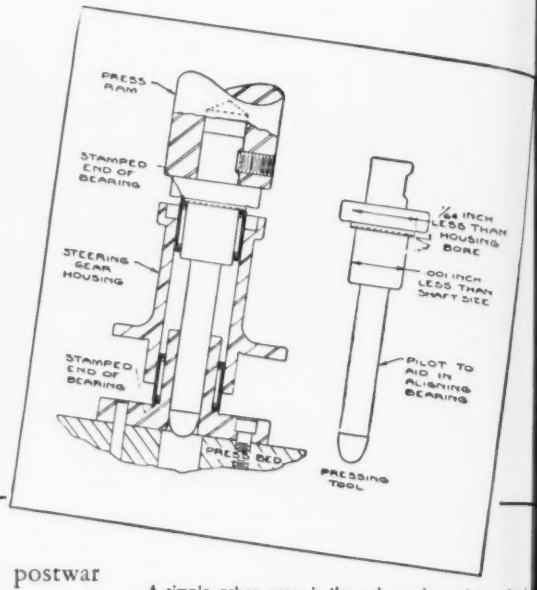
TYPE AT

TYPE NCS

TYPE RC



TYPE PN



A simple arbor press is the only equipment required install Torrington Needle Bearings.

UNIT CONSTRUCTION AND SIMPLICITY OF DESIGN FACILITATE ASSEMBLY LINE PRODUCTION METHODS

One of the outstanding features of Torrington Needle Bearings is the ease and speed with which they are installed. Because of their unit construction, handling and assembly or dis-assembly of associated parts or mechanisms are simplified.

Furthermore, the compact design characteristic of these Torrington Needle Bearings makes possible the use of simpler housing structures. In virtually all cases a bore, machined to proper dimensions, is all that is required to hold the bearing. An arbor press (with properly designed pressing tool) is the only equipment necessary to secure correct installation in practically any application.

And properly installed, in correct press fit, Needle Bearings will not shift or creep—eliminating the need of locking-rings or spacers.

All these installation features contribute to speed and efficiency that result in cost economies on the production line. They are helping today in meeting production schedules; will similarly aid "tomorrow's" postwar production lines.

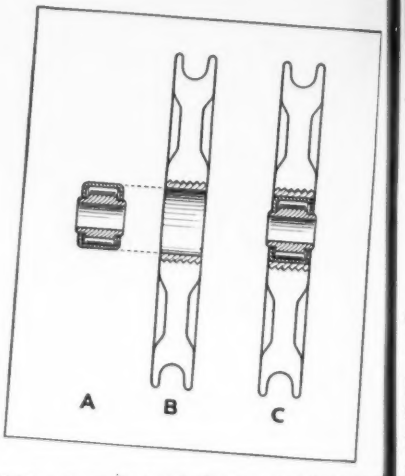
It will pay you to investigate the many advantages of Needle Bearings in terms of your own design and production requirements. A copy of the Torrington Needle Bearing Catalog, available on request, will give you more complete information. Ask for Catalog No. 116. And the services of our engineering department are available to aid you in the selection and application of Needle Bearings for any particular job.

THE TORRINGTON COMPANY

Established 1866 • Torrington, Conn. • South Bend 21, Ind.
"Makers of Needle Bearings and Needle Bearing Rollers"

New York, Boston, Philadelphia, Detroit, Cleveland, Seattle, San Francisco, Chicago, Los Angeles, Toronto, London, England

LET'S GO! U.S.A. KEEP 'EM FLYING!



PN Type Torrington Needle Bearing is installed in aircraft pulley by simple press fit.

TORRINGTON
NEEDLE BEARINGS

PLURAMELT...YOUNGSTER WITH A FUTURE

TODAY, Pluramelt products are entirely allocated for essential purposes. In fabricated form, they're serving in mess trays aboard ship—in field ranges—in kitchen and hospital equipment for the services—in the manufacture of synthetic rubber, high-octane gas, explosives, etc. The list includes both the single and double stainless-armored types.

In each case, of course, Pluramelt is used instead of *solid* stainless steel. The chief reason, therefore, is the very important matter of conservation. Pluramelt saves 60% to 80% of the vital chromium and nickel that solid stainless would consume for the same job.

But there are other prime considerations. Pluramelt in general fabricates easier than solid stainless steel. And, under any conditions of fabrication and subsequent service, it does not—*cannot*—come apart. Pluramelt is unique—a controlled composite steel with an *intermelted* bond that cannot be separated.

Do you want to know more about this stainless-armored steel that is so sure to bulk large in the peacetime manufacturing of the future? Let us work with your engineers and design men to explore the possibilities of Pluramelt in your plans and products.

ADDRESS DEPT. TW-22

Allegheny Ludlum
STEEL CORPORATION
BRACKENRIDGE, PENNSYLVANIA

W & D A-9341

They Take Wartime "Rush Jobs" in stride

Work tagged "rush" doesn't cause a flurry in this mill. Fast color changes are made in a few minutes — without dye "carry-overs" from one job to another.

Moreover, the mill superintendent isn't worried about his ARMCO Stainless Steel dyeing machines outlasting the war. He is certain they will — and for good reason.

Regular inspection of all machines is routine practice. Surface deposits are removed, and the interiors of dye vats get a thorough rinse. When possible, the stainless steel surfaces are exposed to the air overnight.

Simple precautions like these will insure unfailing production and long, trouble-free service life for *your* stainless equipment too. This is especially important now — to you and to the armed forces.

Meanwhile, when you make plans for your new and better postwar equipment, keep ARMCO Stainless Steel in mind. Today it is proving its unique qualities in Uncle Sam's fighting equipment. Out of these war-tests will come improved rustless metals that will go on helping you cut costs and boost production. The American Rolling Mill Company, 1351 Curtis Street, Middletown, Ohio.

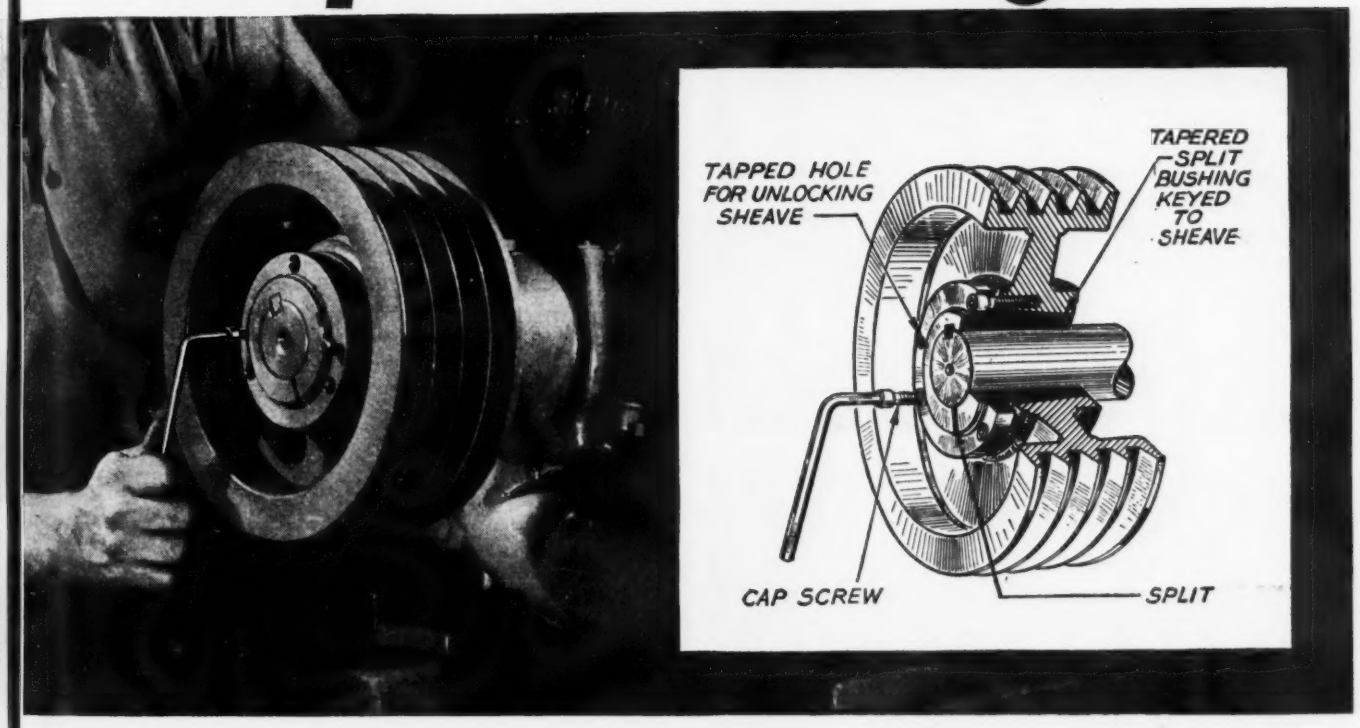
EXPORT: THE ARMCO INTERNATIONAL CORPORATION

The American Rolling Mill Company

STAINLESS ARMCO STEEL

PHOTO COURTESY RIGGS AND LOMBARD

It's Smoother Running because it "Grips like Magic!"



...And it's the fastest mounting sheave on the market—goes on with one easy locking operation—saving man-hours and money.

POSITIVE clamp fit of Allis-Chalmers' great new "Magic-Grip" sheave means shafts are gripped tightly and uniformly...eliminating wobble and shear!

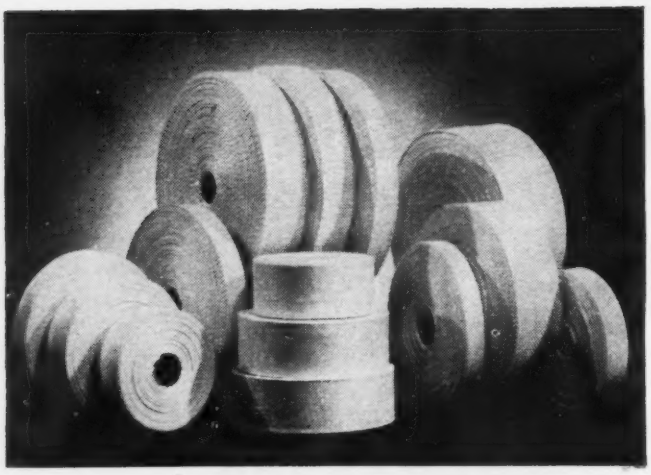
Its tapered split bushing makes it possible for anyone to mount or remove sheave quickly and easily — an important worker-safety feature. Accommodating normal shaft tolerances, the sheave that "grips like magic" may be changed often without injury to shaft.

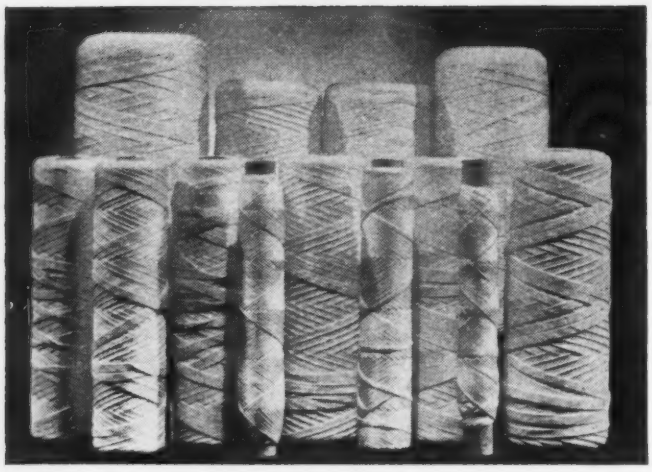
And you get the great new "Magic-Grip" sheave... *at no increase in price!* Now, more than ever, it pays to make Allis-Chalmers your "V-Belt Headquarters."

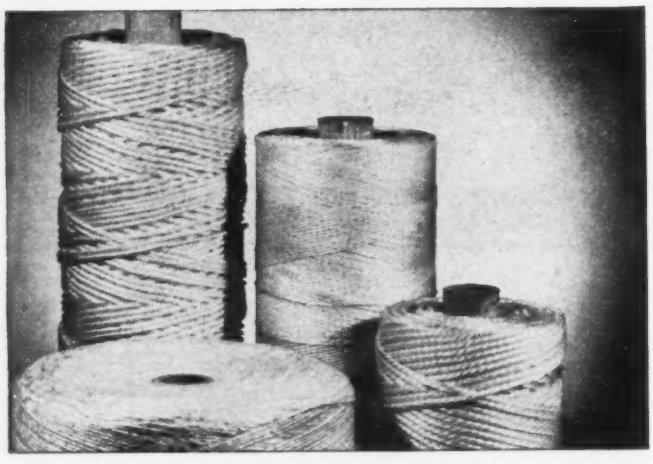
For complete information, ask our nearest district office or Texrope dealer for Bulletin B6310. Or write ALLIS-CHALMERS, MILWAUKEE 1, WIS. A 1681

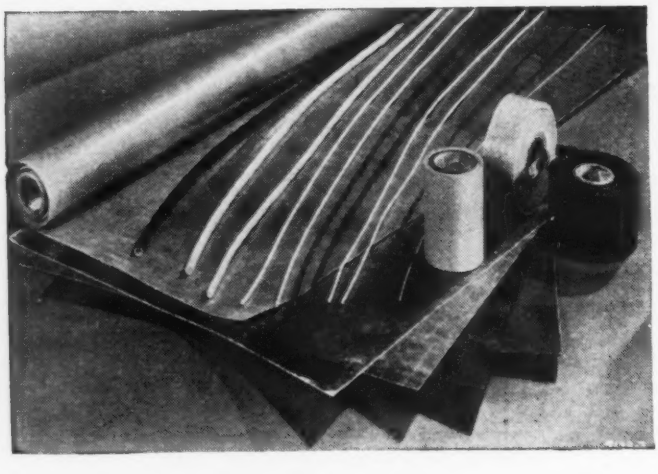
Allis-Chalmers Texrope

"MAGIC-GRIP" SHEAVES









Fiberglas* properties

—helpful in solving problems in electrical insulation

Fiberglas is glass. It will of itself withstand temperatures far in excess of any requirements of an electrical insulation. But high heat resistance is only one of its many basic properties.

Low space factor (thinness) combined with high tensile strength make Fiberglas highly desirable in many applications in which its high-temperature characteristic has value only as a safety factor . . . In textile form, Fiberglas is available in thicknesses down to 2 mils (.0020″).

Fiberglas is resistant to moisture, most acids, oils, corrosive vapors. Again, these properties make it highly desirable for electrical use where high heat resistance is important only as a safety factor.

In textile form, Fiberglas is a good conductor of heat. This property also permits its use in many electrical applications.

And, of course, Fiberglas is permanent. It does not deteriorate with age.

Treated and Untreated Forms

Untreated Fiberglas is available as cloth, tapes, sleeving, and cord.

In treated forms, Fiberglas is available as varnished cloth and tapes; combination Fiberglas-and-mica sheets and tapes; pressure-sensitive tapes; single, double, and triple saturated sleeving; varnished tubing; and laminated Fiberglas sheets, sticks, or wedges.

Fiberglas-covered magnet wire, lead wire, and other wires are obtainable from leading wire manufacturers.

Fiberglas is now available for immediate delivery. Increased production facilities make this possible. Consult your electrical distributor. *Owens-Corning Fiberglas Corporation, Toledo 1, Ohio, Fiberglas Canada, Ltd., Oshawa, Ont.*

FIBERGLAS

*T. M. Reg. U. S. Pat. Off.

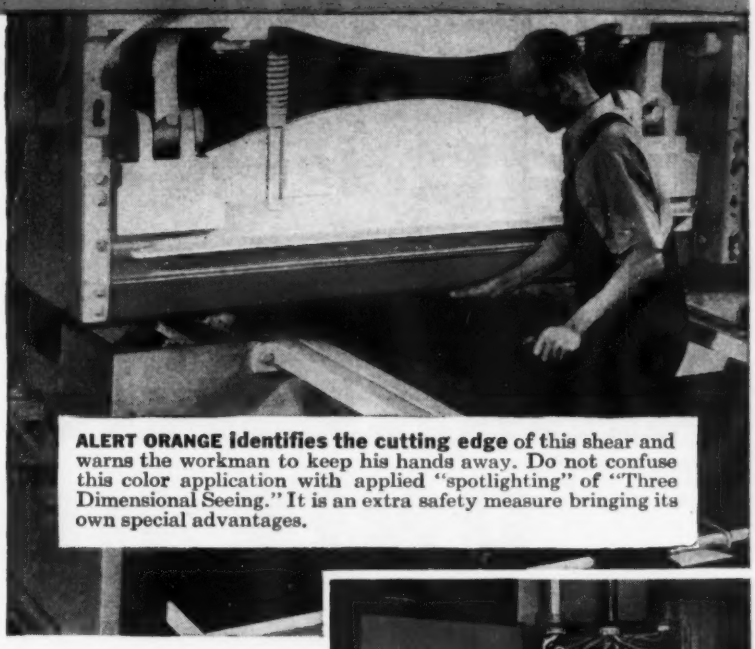
ARMY (E) NAVY

YARNS • TAPES • CORD • SLEEVING

CLOTH and OTHER FORMS

DU PONT Safety COLOR CODE

ALERT ORANGE SHOUTS TO WORKERS "BE CAREFUL"



ALERT ORANGE identifies the cutting edge of this shear and warns the workman to keep his hands away. Do not confuse this color application with applied "spotlighting" of "Three Dimensional Seeing." It is an extra safety measure bringing its own special advantages.

This strong visual aid to safety is one of six color signals in a *uniform* code developed for industry by Du Pont and safety engineers

Alert Orange can save many a worker from injury on the job. Factories are already using the strength and visibility of this color to indicate dangerous parts of machines or equipment that might crush or cut an employee and waste manpower.

Alert Orange contains more significance for you because it is one of six standard colors that make up a Safety Color Code for industry. This Code is considered by many as the first *uniform*, effective, scientifically sound system of color signals for promoting plant safety. It is a development of Du Pont and its color consultant, working with leading safety engineers. Here are the six colors and their specific uses:

HIGH-VISIBILITY YELLOW indicates strike-against, stumbling, or tripping hazards.

ALERT ORANGE marks parts of machines that might cut or crush a worker.

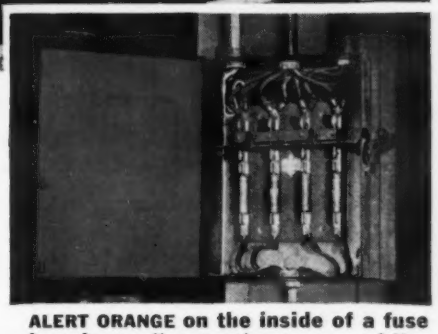
SAFETY GREEN identifies first aid equipment and the location of safety devices.

FIRE-PROTECTION RED points out fire-protection equipment.

PRECAUTION BLUE warns workers against use of equipment under repair.

TRAFFIC WHITE marks aisles, storage places and waste receivers.

Certainly, any plant can use the Safety Color Code. The Code colors and symbols can be applied anywhere. They are important supplements to Du Pont "Three Dimensional Seeing," so important in high-lighting working surfaces of machines, and to required mechanical guarding and protective equipment. Leading safety authorities recognize the advantages of the orderly, coordinated standard of practice for all plants which the Safety Color Code provides. And factories have already proved its value.



ALERT ORANGE on the inside of a fuse box door calls attention to exposed live wires and electrical equipment that may be a hazard in any plant.

An ALERT ORANGE band on a moving gear wheel quickly identifies a possible hazard. On the inside surface of the removal guard it urges immediate replacement.

DU PONT

SEND THIS COUPON TODAY for the new booklet which tells a complete story of the Du Pont Safety Color Code. See how six standard colors can be used to make hazards less dangerous and reduce accidents. You will find it interesting and profitable reading.

E. I. du Pont de Nemours & Co. (Inc.)
Finishes Division, Dept. TW 54
Wilmington 98, Delaware

Send me your new booklet on the Safety Color Code.

Name_____
Title_____
Company_____
Address_____
City_____ State_____

Sure you can buy

American Blower Vertical Unit Heater

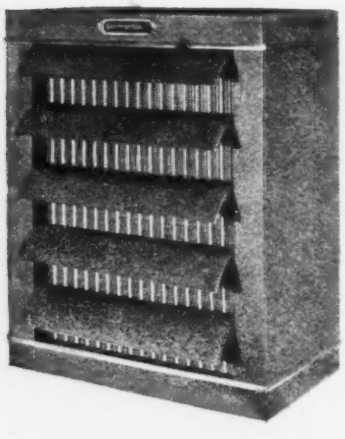
AMERICAN BLOWER UNIT HEATERS

Any firm or individual, who has an order for unit heaters carrying a priority rating of AA-5 or better, with a specified delivery date is eligible to buy American Blower Unit Heaters.

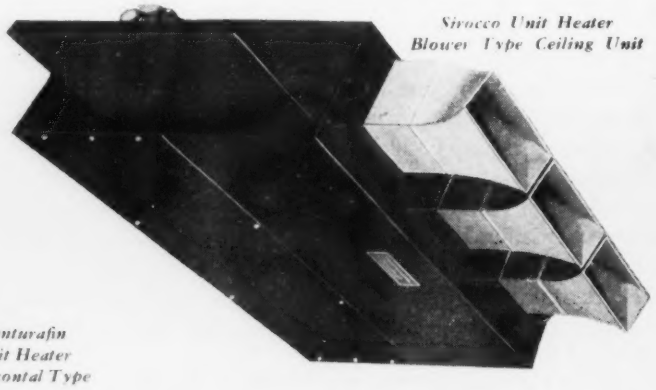
If you require new heating equipment for enlargement of your plant, or modernization, or to replace obsolete equipment, we advise you to get orders in early.

Remember, American Blower Horizontal Type Unit Heaters are built in sizes of 24,000 B.T.U. and larger — Vertical Unit Heaters in 144,000 B.T.U. and larger—and Blower Type Units in 216,000 B.T.U. or larger. All are equipped with constant speed motors.

You cannot buy better heating units regardless of price, and you'll find as thousands of other users have found that American Blower Unit Heaters save valuable production space, save valuable fuel, cut down absences due to improper heating, and insure healthful temperatures.



Venturafin Unit Heater Horizontal Type



Sirocco Unit Heater Blower Type Ceiling Unit

ARMY (E) NAVY

For Excellence in Production

AMERICAN BLOWER

AMERICAN BLOWER CORPORATION, DETROIT, MICHIGAN
CANADIAN SIROCCO COMPANY, LTD., WINDSOR, ONTARIO

Division of AMERICAN RADIATOR & Standard Sanitary CORPORATION

Here's a heavy-duty loom oil that—

DOES NOT RUST DRIP or CREEP

SHELL TEXTILIS OIL 72G

MANUFACTURERS who are having trouble with their loom oil creeping and dripping all over the place will appreciate Shell Textilis Oil 72G.

Although it "stays put" on the machine, it is readily removed from the goods in the finishing process, leaving no costly, tell-tale stains.

Shell Textilis Oil 72G is but one of a complete line of lubricants designed specifically for each type of textile machine lubrication.

It will pay you to discuss your Textile lubricating problems with a Shell Lubrication Specialist.

SHELL

TEXTILIS OILS

SHELL OIL COMPANY, INC.

How would YOU design

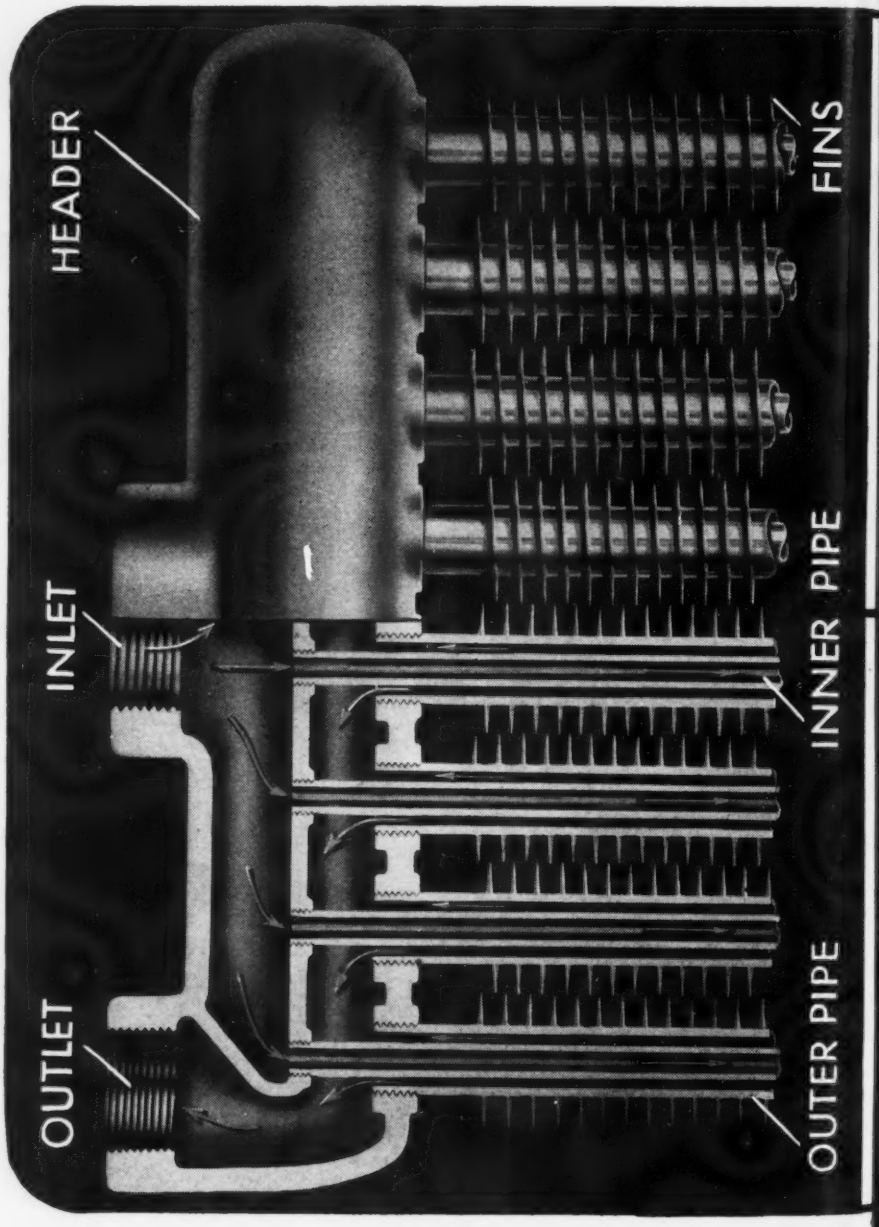
PROVED ON 1,001 tough testing grounds!

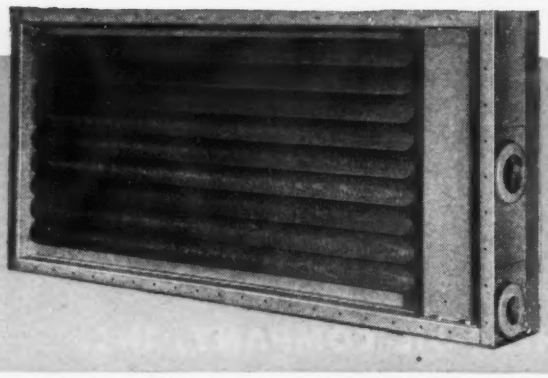
ON ALL TYPES of heating and drying jobs—from army installations in Alaska to war plants in America—on 1,001 tough testing grounds you'll find the Sturtevant Heavy-Duty Steel Pipe Heater *far exceeding* expectations and guarantees.

It eliminates the risk of early and frequent replacements—cuts back maintenance costs to near the zero point.

Why not get all the facts? Simply mail in the coupon below. We'll send you a free copy of our fully illustrated 32 page catalog (No. 462) which contains complete construction details, dimensions, operating principles and performance data of the Sturtevant Heavy-Duty Steel Pipe Heater.

B. F. STURTEVANT COMPANY
Hyde Park Boston 36, Mass.
Branches in Principal Cities

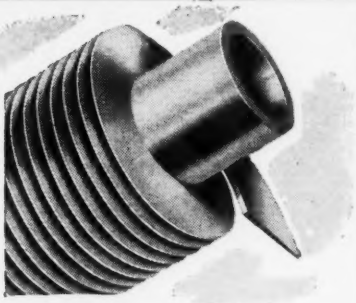




THE STURTEVANT HEAVY-DUTY STEEL PIPE HEATER IS NOT A WAR BABY

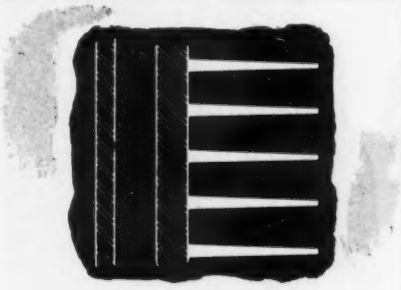
It was conceived, designed and *in service* long before this nation felt the first hot flames of battle. It was ready—the result of 8 years' careful research—to step in and help Uncle Sam arm and fight. Today, Sturtevant engineers welcome the opportunity to work with your post-war planners . . . to interpret heavy-duty heaters in the light of peace-time production problems.

a HEAVY-DUTY heater?



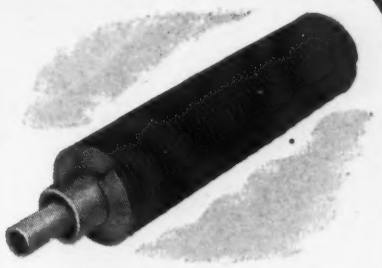
To withstand severe service conditions . . .

you'd build it around standard steel pipe. *That's what Sturtevant does!* Steam is carried in steel pipe from the time it enters the heater until it returns via the condensate line; there are no "weak links" in the heater system *from* the boiler *back* to the boiler.



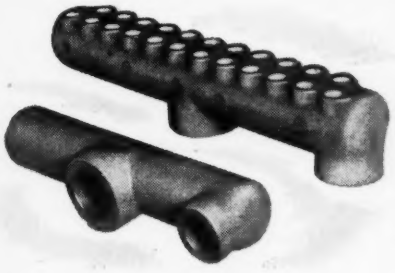
To speed air-flow . . .

you'd certainly want *smooth* fins. And that's what you get in the Sturtevant Steel Pipe Heater. No crimping cuts to create air resistance or accumulate efficiency-robbing dust. Another secret of high performance lies in the *tapering* fins . . . thickest at the base, tapering down toward the tip . . . resulting in a naturally greater, more even transfer of heat over the entire surface.



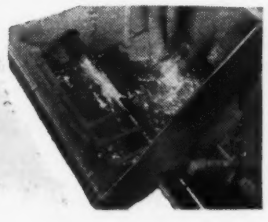
Freeze-ups must be guarded against . . .

so your design would incorporate pipe-within-a-pipe construction—just like Sturtevant's! The use of a single header leaves one end of the pipe free to take care of heavy duty expansion. The internal tube promotes free, unrestricted circulation—is just about the best bet for beating frost-burst coils.



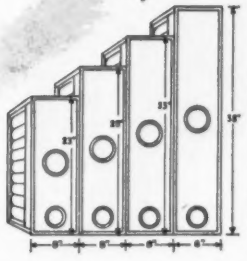
When it comes to installation . . .

of course, you may encounter space restrictions . . . another reason why you'd want the Sturtevant *single* header feature. This allows installation at almost any angle—vertically or horizontally. *Plus* factors include simplified installation . . . improved steam circulation. Headers are available for single or dual rows of coils, depending on heating capacity needed.



You'd most certainly consider heat transfer . . .

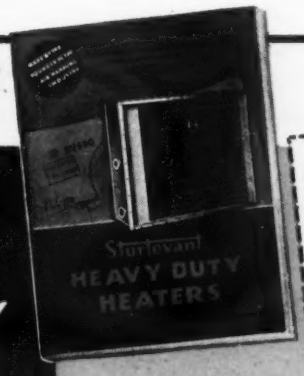
Here we see the fin pipe of a Sturtevant steel pipe heater passing through a solder bath which affords a metallic bond between the fin and the pipe. This means adequate contact for maximum heat transfer as well as protection of the external surfaces.



Now, best of all . . .

the Sturtevant Heavy-Duty Steel Pipe Heater is made in the same standard sizes used for copper units. It requires no more space—compares favorably in cost and is particularly adapted to use with steam in the higher temperature ranges. And you get the same guarantee that goes with a pre-war standard heating surface—*a full year's guarantee against any imperfections.*

SEND FOR THIS FREE CATALOG . . . TODAY!
IT CAN SAVE YOU MANY HEADACHES!



Sturtevant
REG. U. S. PAT. OFF.
Puts Air to Work

B. F. STURTEVANT COMPANY
Hyde Park, Boston 36, Mass.

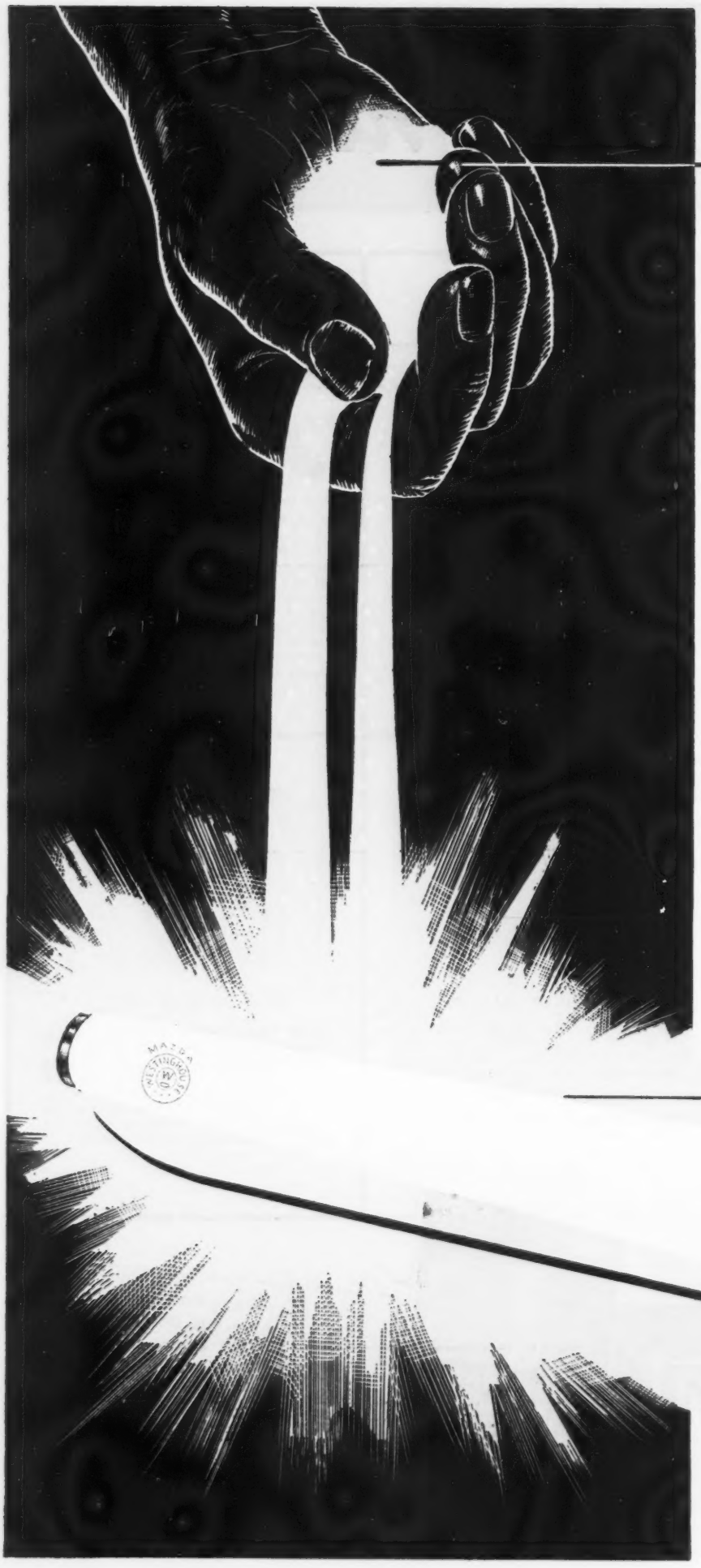
Please send me the Sturtevant Heavy-Duty Steel Pipe Heater catalog No. 462—without cost or obligation.

Name_____

Position_____

Company_____

Address_____


THE MORE
THE MORE
B-R-I-G-H-T
FROM END TO END

SPARKLE IN THE POWDER . . .

The greater the care in selection and compounding of phosphor powders for fluorescent lamps, the greater the brightness from the lamp, and the more See-ability the lamp produces in service.

Westinghouse research engineers found, for example, that foreign substances in a batch —*just one part in a million*—make an appreciable difference in light output.

To eliminate these impurities, Westinghouse research has devised new and effective purification processes. A carefully planned and meticulously controlled routine of acid washing, high-temperature firing, grinding, mixing and blending, assures maximum purity and brightness performance in the finished phosphor.

Next time you order fluorescent lamps, take advantage of this Westinghouse research and product improvement — ask your Westinghouse dealer for bright, long-lasting Westinghouse Mazda Fluorescent Lamps.

While much of our fluorescent production is earmarked for war industry, we are continuing as far as possible to supply fluorescent lamps for essential civilian use. Westinghouse Electric and Manufacturing Company, Bloomfield, New Jersey.

SEE-ABILITY FROM THE LAMP

Westinghouse

PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE

MAZDA LAMPS FOR SEE-ABILITY

WESTINGHOUSE PRESENTS JOHN CHARLES THOMAS • SUNDAY 2:30 EWT., N.B.C. • "TOP OF THE EVEN NG" • MON. WED. FRI. 10:15 EWT., BLUE NET.

Enlarged reproduction free on request

Example of Total War

That machine combing der fuehrer's forelock is one of your carding engines, teaching him a lesson.

Schicklgruber thought only the Axis could gear for total war . . . that "soft" democracies couldn't line up their total fighting and producing resources in time to stop him.

For one, America's Textile Industry shows he guessed wrong. Not only are thousands of textile men and women now in the armed forces, but the Textile Industry has broken all records in supplying materials for uniforms, blankets, tents and tarpaulins.

Many of America's textile machines are using Wissco Card and Napper Clothing to help speed their production. Made of special steels, the staples are clean-cut, precision-ground for keen penetration, and checked under a microscope. Available in all standard foundations, and Wissco Special Foundation which permits up to 200 lbs. more tension and assures positive pitch and long life. Glass hardened points, too. Write for literature.

Wissco

CARD AND NAPPER CLOTHING

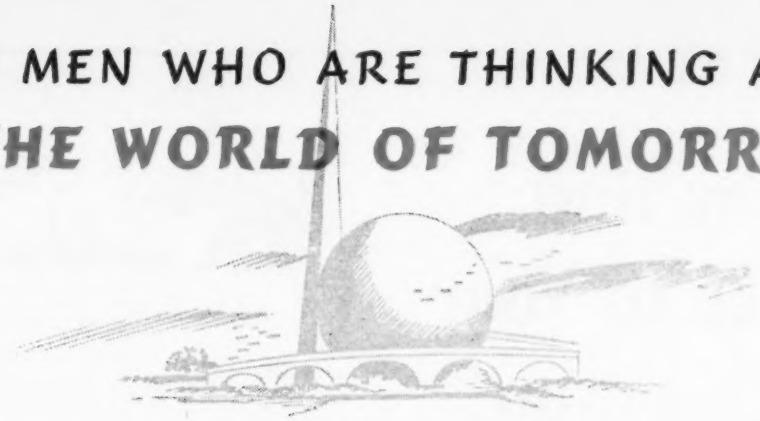
COPYRIGHT, 1944

WICKWIRE SPENCER STEEL COMPANY

500 FIFTH AVENUE, NEW YORK 18, N. Y. . . . BUFFALO, CHICAGO, SAN FRANCISCO, WORCESTER

WISSCO CARD AND NAPPER CLOTHING FOR WOOL, WORSTED, COTTON, SILK, ASBESTOS AND SPECIALTIES

TO MEN WHO ARE THINKING ABOUT THE WORLD OF TOMORROW:



Remember the World's Fair of 1939-40? Remember the truly amazing things it promised us . . . for the wonderful world to come? ● Well, all those phenomenal accomplishments of science . . . plus many that no one ever dared to even dream about in those halcyon days . . . will be ready for you when the time comes for conversion to peacetime production ● This forward-thinking organization . . . one of the largest and most advanced in the *Electronics* field . . . is now engaged all-out in war production ● But many of the developments in which it pioneered are readily adaptable to ultra-modern, automatic production methods ● Our Engineering Department will gladly collaborate with yours in determining *now* just what part *Electronics* will play in *your* World of Tomorrow.

DIVISION OF...
MAGUIRE INDUSTRIES, INC., GREENWICH • STAMFORD • BRIDGEPORT • NEW MILFORD • NEW YORK

QUICK QUIZ FOR TEXTILE MEN

You may find the answer to Your $1,000 Question!

Q Are you using too many lubricants?

A Could be! One manufacturer was amazed and money ahead when Alemite Lubrication Specialists showed him how to cut the number of required lubricants from 41 to 16 through a modernized set-up. Time, money, and manpower were saved. Results were far better. No bearing failures due to improper lubrication. How many lubricants do you need?

Q Are your machines capable of "M. P. T"?*

A Not if your machines are stopped too long, or too often, for lubrication. For instance, Alemite Lubrication Specialists helped a textile plant put 12 hours extra productive time each week into a battery of Whittin Spinning Frames by a simple change in lubricating methods. Fifty-two times 12 is a lot of extra productive time. Have you checked up on your lubrication time lately?

*More Productive Time

Q Is every bearing on your machines getting proper lubrication?

A Before you answer, listen to this: In one plant, Alemite Lubrication Specialists discovered 17 plugged lubrication inlets in a battery of machines. Seventeen bearings that weren't being lubricated! A close call that could have cost plenty. But the complete, thorough Alemite service remedied the situation in the nick of time, thus forestalling an inevitable breakdown.

Yes! "LUBRI-*chaos*" Can Cost You Money, Machines and Production!

"Lubri-*chaos*" is an affliction found in many of the best managed plants. It took the war and stepped up production schedules to spotlight it. But Alemite, as the pioneer in pressure lubrication, has crusaded for years to remedy this costly evil. Today, the modern Alemite method of handling and application of lubricants is recognized as the answer to "Lubri-*chaos*" and is proving its worth in war plants all over the nation.

Tomorrow, when post-war competition makes new demands on industry, the Alemite method will play a vital part in production. That is why plant managers and operators with an eye to peace-time markets are getting together with Alemite Lubrication Specialists to gain the competitive advantage of the world's most modern lubricating methods. Alemite, 1888 Diversey Parkway, Chicago 14, Ill., or Belleville, Ontario.

WANTED

Tough Job by Man with "MML" Degree!

This man, an Alemite Lubrication Specialist, is a "Master of Modern Lubrication." His technical training and experience equip him to consult with you about applying the most modern lubricating methods. He has added more productive time to machines, saved lubricants and manpower.

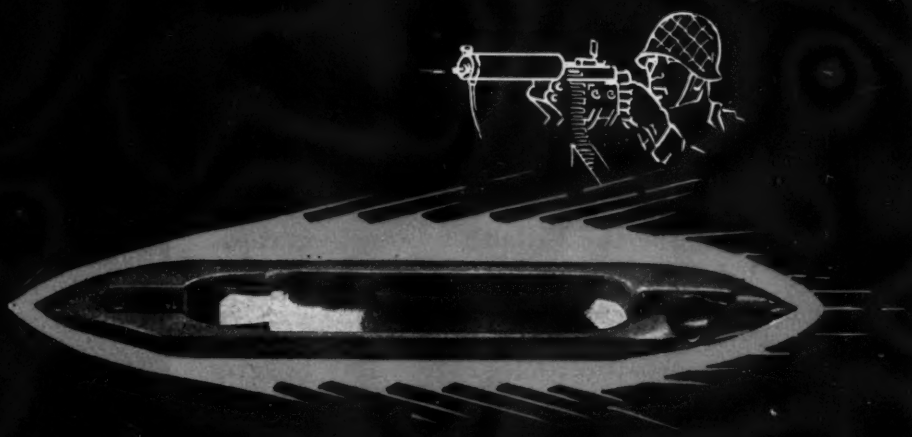
He's ready to go to work for you now, backed by the world's most experienced organization in the handling and applicaion of lubricants. Call him. Or, if you prefer, write, wire or phone for his address.

ALEMITE

REG. U.S. PAT. OFF.

First in Modern Lubrication

CONSULTATION · ENGINEERING · EQUIPMENT · LUBRICATION · MAINTENANCE



THE SHUTTLE

which has to withstand the continual terrific pounding

(blow after blow amid constant friction)

must be *TEMPERED* in order to

give the utmost in continual operation and longevity of usefulness.

SOUTHERN SHUTTLES

are TEMPERED

— the only Shuttles on the market in which the strain and uneven texture of the wood has been scientifically removed by heat treatment.

Buy the Shuttle with this longer life.

SOUTHERN SHUTTLES DIVISION

STEEL HEDDLE MFG. CO.

GREENVILLE, S. C.

Manufacturers of all types of shuttles
Plain tempered dogwood and persimmon or fibre covered

Atlanta, Ga.
Greensboro, N. C.
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Philadelphia, Pa.
Providence, R. I.
Woonsocket, R. I.

TRANSMISSIONEERED MEANS ADVANCE DESIGN IN POWER DRIVES

Transmissioneering Delivers More Pulling Power with D-V Drives...

Grip and pulling power are Transmissioneered into Dodge D-V Drives. They combine the V-Belt's transmission capacity, resilience, and ability to absorb sudden shocks with the high efficiency of transmissioneered, precision-built sheaves.

A perfectly matched team—precision-grooved D-V Sheaves with full contact D-V Belts—give "Matched Quality" performance, negligible slippage loss and an even division of the load among fully seated, tightly gripping individual belts. D-V Drives are easy to install and maintain. Their smooth pick-up of the load and relatively low tension make them easy on the driving motor.

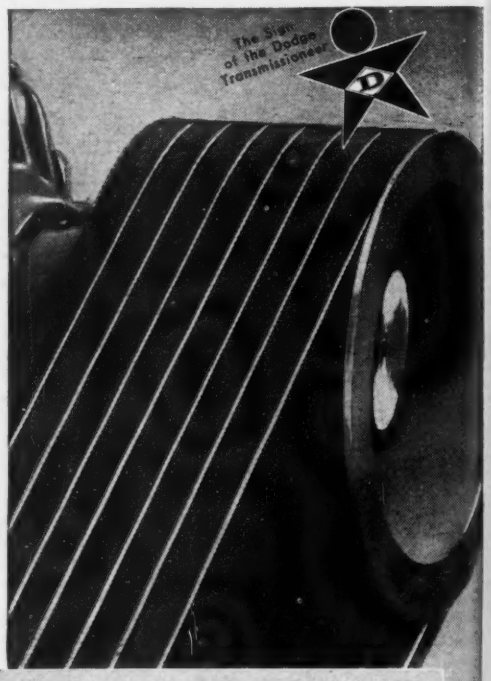
The Dodge Transmissioneer—your local Dodge Distributor—can furnish, usually out of stock, D-V Drives complete with belts and sheaves. He will gladly work with you to select "The Right Drive for Every Job".

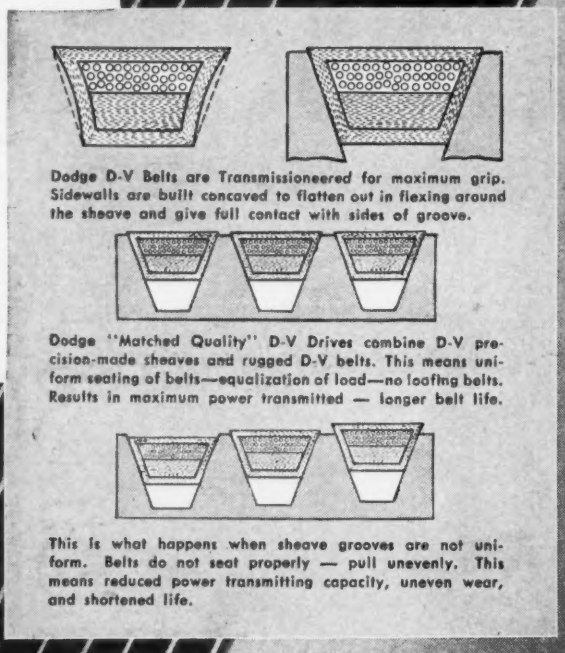
DODGE MANUFACTURING CORPORATION
MISHAWAKA, INDIANA, U.S.A.

THE SIGN OF THE DODGE TRANSMISSIONEER

. . . BUY MORE WAR BONDS

No. 6





Dodge D-V Belts are Transmissioneered for maximum grip. Sidewalls are built concaved to flatten out in flexing around the sheave and give full contact with sides of groove.

Dodge "Matched Quality" D-V Drives combine D-V precision-made sheaves and rugged D-V belts. This means uniform seating of belts—equalization of load—no loafing belts. Results in maximum power transmitted — longer belt life.

This is what happens when sheave grooves are not uniform. Belts do not seat properly — pull unevenly. This means reduced power transmitting capacity, uneven wear, and shortened life.

DODGE

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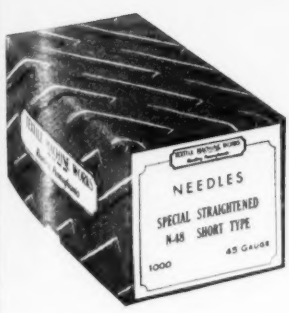
Dodge Manufacturing Corporation

. . . THE RIGHT DRIVE FOR EVERY JOB



Designed for Beauty . . . Every woman knows that today's clear, even-textured full-fashioned* stockings were truly designed for beauty. Every stocking manufacturer knows that the first step toward superior knitting results is careful selection of the needles. Keep your Knitting Machines young and effective with TMW Needles . . . *And remember: Regular Reneedling Pays! Let us put your needle bars in shape for faster, more accurate, more profitable knitting.*

TEXTILE MACHINE WORKS • READING, PA.

* Full-fashioned means knitted to fit the shape of the leg.

"The presence of the doctor is the first part of the cure."
FRENCH PROVERB

Until the Victory is Won! . . . The men and experience back of Reading Full-Fashioned Knitting Machines are enlisted for the duration. We *cannot* give you new machines — but we *will* do the next best thing: Our engineers will do their utmost to help you keep your present equipment at highest efficiency. *Let us tell you about our complete reconditioning service and what it means in terms of better fabrics and bigger profits.*

TEXTILE MACHINE WORKS • READING, PA.

THE WAR DECORATIONS OF TEXTILE MACHINE WORKS

Bur. of Ord. Flag and Navy "E"
July 25, 1941

One Star All-Navy "E" Burgee
January 25, 1942

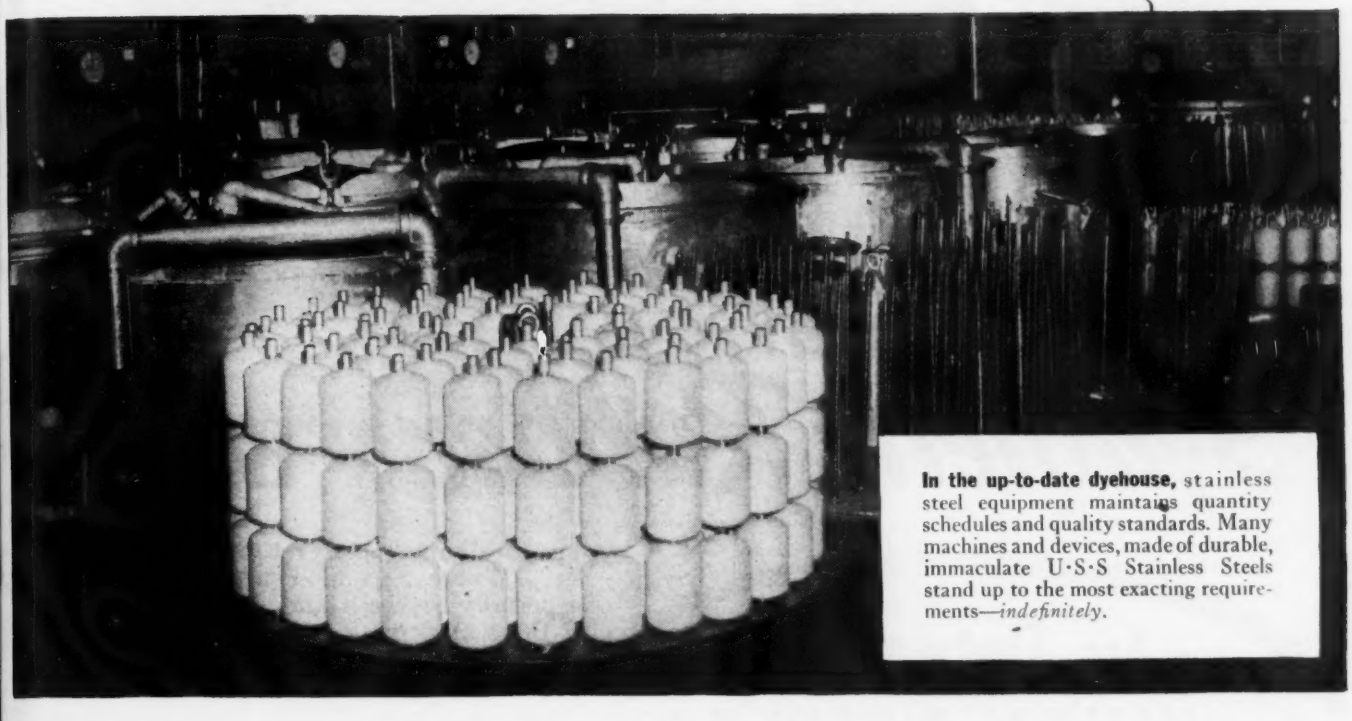
Two Star Army-Navy "E"
July 25, 1942

Three Star Army-Navy "E"
January 25, 1943

Four Star Army-Navy "E"
January 11, 1944

FOR LIGHTER, SPEEDIER EQUIPMENT

look to Stainless Steel



In the up-to-date dyehouse, stainless steel equipment maintains quantity schedules and quality standards. Many machines and devices, made of durable, immaculate U·S·S Stainless Steels stand up to the most exacting requirements—*indefinitely.*

MANY mill superintendents, overseers and other officials plan to improve production efficiency, when the opportunity comes, by installing light, precision machines, which will work at higher operating speeds.

That is undoubtedly one reason for the increasing use of stainless steels in the textile equipment field. Its high strength-weight ratio makes it the ideal material for flexibility, adaptability and high-speed operation. Other qualities combine to maintain processing efficiency, to prevent difficulties which menace quality standards.

Largely used in the manufacture of spools, spindles, dyeing equipment, dry cans, buckets, vats, tanks, hosiery forms, needles, rollers and sinks, U·S·S Stainless Steels resist corrosion from dyes or cleaning compounds, prevent color bleeding, eliminate rust and rust stains, reduce cleaning time and cost, making for better, more salable products.

Combining high strength, high resistance to heat and oxidation, stainless steels are paying their way in hundreds of industrial applications by increasing the active service life of essential equipment. Strong, tough, corrosion-resistant, stainless steel depends, for its unique qualities, on accurate composition and skillful heat treatment. Precision control, specialized equipment and the experience of skilled workers, insure the uniformly high quality of U·S·S Stainless Steel.

The services of our representatives are at your disposal at all times. They will be glad to consult with you regarding your problems and future plans, without cost or obligation.

U·S·S STAINLESS STEEL

SHEETS · STRIP · PLATES · BARS · BILLETS · PIPE · TUBES · WIRE · SPECIAL SECTIONS

AMERICAN STEEL & WIRE COMPANY, *Cleveland, Chicago and New York*
CARNEGIE-ILLINOIS STEEL CORPORATION, *Pittsburgh and Chicago*
COLUMBIA STEEL COMPANY, *San Francisco*
NATIONAL TUBE COMPANY, *Pittsburgh*
United States Steel Supply Company, Chicago, *Warehouse Distributors*
United States Steel Export Company, New York

UNITED STATES STEEL

In These Installations and Hundreds More

* GATES *Synthetic Rubber* V-Belts

—Are Outwearing Any NATURAL RUBBER Belts Ever Used!

MORE than 6 years ago Gates began supplying American industry with large quantities of V-Belts made entirely of SYNTHETIC rubber.

***There are, of course, many kinds of synthetic rubber. Gates uses each kind where it best meets some particular service need.**

For example:—one special synthetic rubber selected by Gates withstands oil and heat much better than natural rubber. Where oil and heat conditions are especially severe, Gates special synthetic V-Belts are giving 3 times to 4 times the service life of any natural rubber V-Belt ever used.

The fact that Gates has had such long experience in making V-Belts of synthetic rubber—and that Gates synthetic rubber V-Belts have proved themselves through more than 6 years under the severest service conditions—is of greatest importance to anyone who buys V-Belts today. The advantage of Gates' long head-start and outstanding success in making V-Belts of synthetic rubber can now be put to work for you right in your own plant.

You have only to pick up your telephone directory and call the Gates Field Engineer. He will put at your service the full benefits of Gates' knowledge and experience without the slightest obligation.

445

THE GATES RUBBER COMPANY

Engineering Offices and Stocks in All Large Industrial Centers

GATES VULCO ROPE DRIVES

CHICAGO, ILL. 549 West Washington

DALLAS, TEXAS 2213 Griffin Street

NEW YORK CITY 215-219 Fourth Avenue

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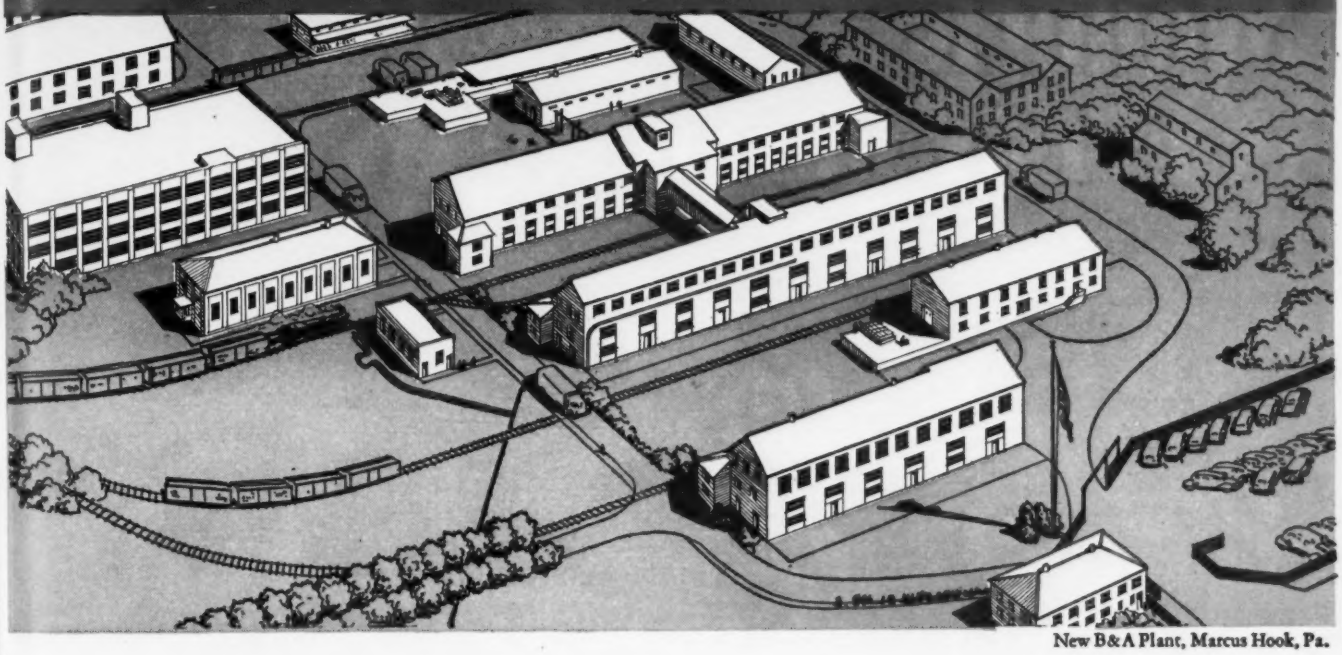
DENVER, COLO. 999 South Broadway

CHARLOTTE, N. CAROLINA 507 Builders' Building

GREENVILLE, S. CAROLINA 104 West Washington Street

ATLANTA, GA. 738 C. & S. National Bank Building

AGAIN *GENERAL CHEMICAL* CREATES NEW FACILITIES FOR BAKER & ADAMSON PRODUCTS TO SERVE AMERICAN INDUSTRY!



New B&A Plant, Marcus Hook, Pa.

THESE NEW FACILITIES for production of Baker & Adamson reagent and fine chemicals provide ideal manufacturing areas, additional research and development laboratories, and special storage and shipping accommodations. This plant's output, coupled with that of other Baker & Adamson producing units and distributing stations throughout the United States, marks another forward step in Baker & Adamson leadership.

Basic materials for many Baker & Adamson quality products made here come directly from sixteen of General Chemical Company's producing locations. With such fundamental sources of supply, including many Company-owned mines for raw materials, Baker & Adamson is in a pre-eminent and unique position for meeting the expanding uses of high-purity chemicals in industry.

Whether you require laboratory reagents, fine chemicals, or other products prepared in accordance with your formulae—avail yourself of the Baker & Adamson facilities. Experienced technical service representatives are ready to discuss *your* chemical problems and requirements. Baker & Adamson stocks are carried in many principal cities!

Fine Chemicals for Industrial America

GENERAL CHEMICAL COMPANY

GENERAL CHEMICAL COMPANY

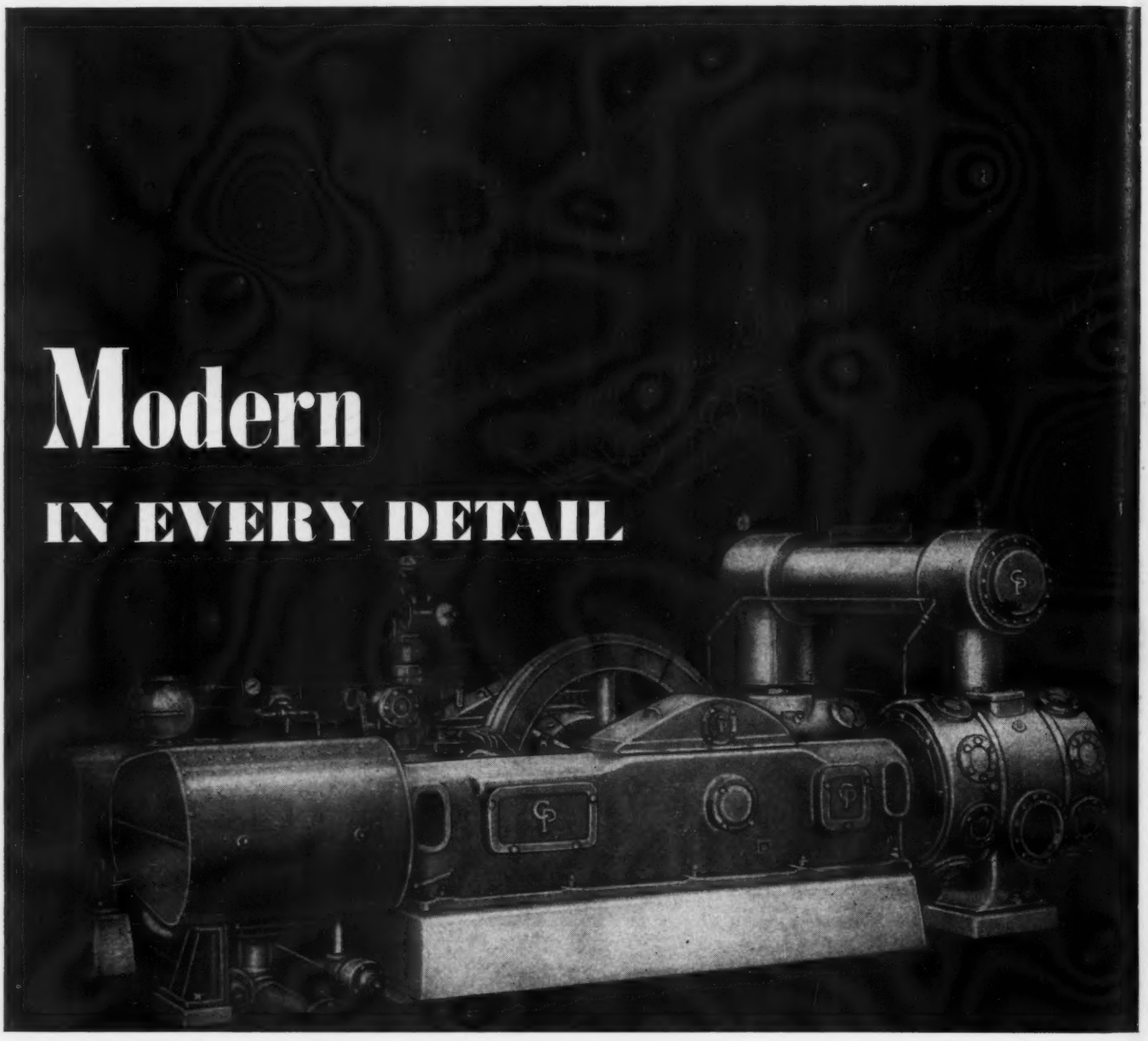
40 RECTOR STREET, NEW YORK 6, N. Y.

Technical Service Offices: Atlanta • Baltimore • Boston • Bridgeport (Conn.) • Buffalo • Charlotte (N.C.) Chicago • Cleveland • Denver • Detroit • Houston • Kansas City • Milwaukee • Minneapolis New York • Philadelphia • Pittsburgh • Providence (R. I.) • St. Louis • Utica (N. Y.)

Pacific Coast Technical Service Offices:

Los Angeles • San Francisco • Seattle, Wenatchee and Yakima (Wash.)

In Canada: The Nichols Chemical Company, Limited • Montreal • Toronto • Vancouver



CLASS H STEAM DRIVEN COMPRESSOR

FORTY years of experience went into the building of CP Class H — latest model of CP Steam Driven compressors.

A thoroughly modern steam end, proportioned to the purchaser's steam conditions, combined with full force-feed lubrication of the running gear and a highly efficient air end with its Simplate Valves, all contribute to the high overall economy of these CP machines. The double crosshead-tie rod construction provides direct, straight-line transmission of power from steam end to air end. Capacities range from 400 to 6600 c.f.m., 100 to 125 pounds air pressure. Other sizes in single and multi-stage design for lower and higher pressures. Write for literature.

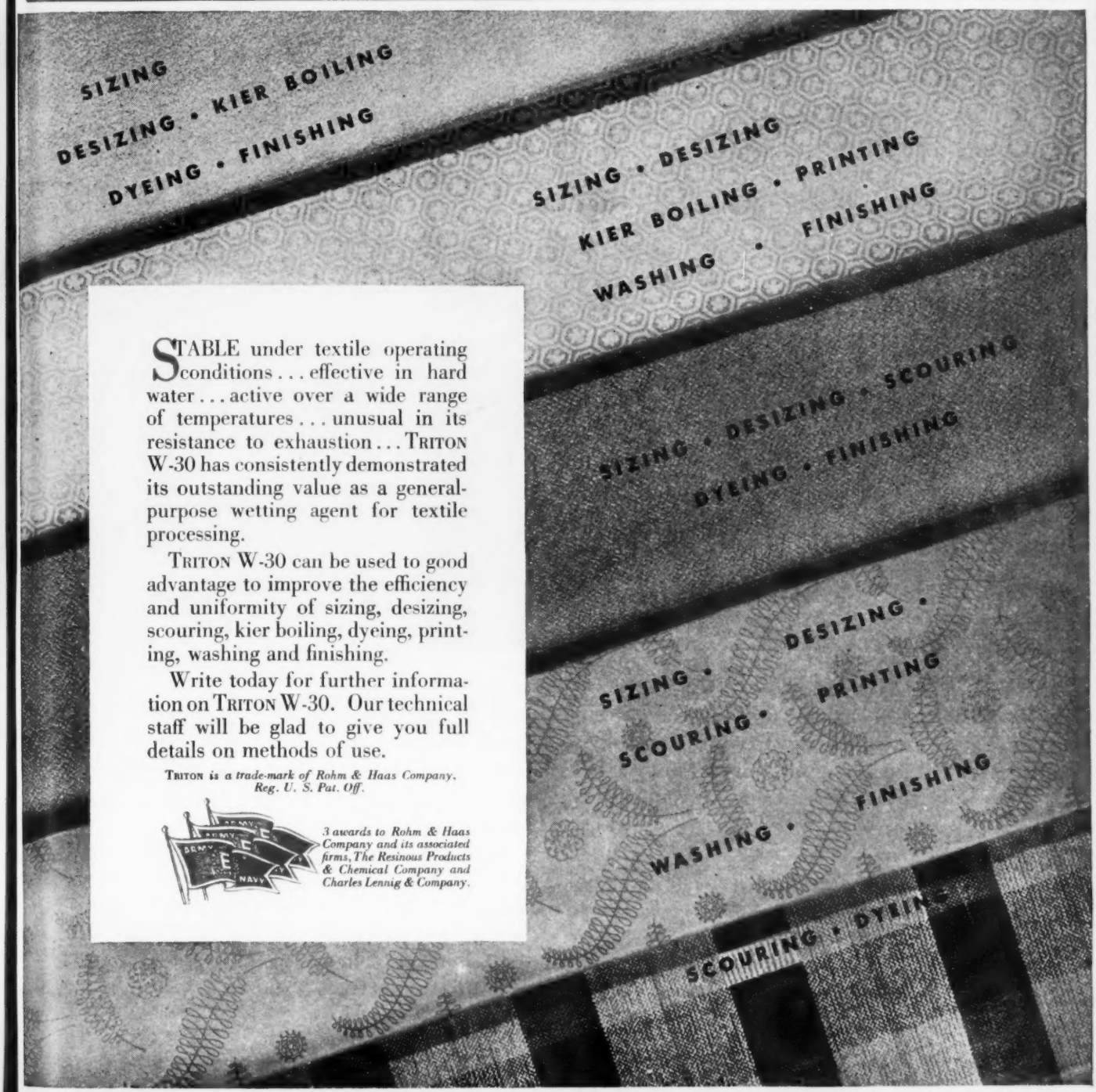
★★★★★★★★★
PNEUMATIC TOOLS
ELECTRIC TOOLS
(Hicycle...Universal)
ROCK DRILLS

CHICAGO PNEUMATIC
TOOL COMPANY
General Offices: 8 East 44th Street, New York 17, N. Y.

★★★★★★★★★
AIR COMPRESSORS
VACUUM PUMPS
DIESEL ENGINES
AVIATION ACCESSORIES

Time-tested leadership as an all-purpose surface-active material

TRITON W-30



STABLE under textile operating conditions . . . effective in hard water . . . active over a wide range of temperatures . . . unusual in its resistance to exhaustion . . . TRITON W-30 has consistently demonstrated its outstanding value as a general-purpose wetting agent for textile processing.

TRITON W-30 can be used to good advantage to improve the efficiency and uniformity of sizing, desizing, scouring, kier boiling, dyeing, printing, washing and finishing.

Write today for further information on TRITON W-30. Our technical staff will be glad to give you full details on methods of use.

TRITON *is a trade-mark of Rohm & Haas Company, Reg. U. S. Pat. Off.*

3 awards to Rohm & Haas Company and its associated firms, The Resinous Products & Chemical Company and Charles Lennig & Company.

ROHM & HAAS COMPANY

WASHINGTON SQUARE, PHILADELPHIA 5, PA.

Manufacturers of Chemicals for the Textile, Leather and other Industries . . . Plastics . . . Synthetic Insecticides . . . Fungicides . . . Enzymes

✓ –Better Lubrication
✓ –Lower Maintenance costs
✓ –Less "down-time" for machines

when the Gulf Lubrication Service Engineer is "in the picture"

Actual photo of a Gulf Lubrication Service Engineer checking roving frame lubrication in a prominent southern textile mill.

ONE answer to the problem of getting maximum poundage from your machines is to make sure that a minimum of productive time and effort is lost due to shutdowns and below par performance caused by excessive wear.

Here a Gulf Service Engineer can give you effective help. A *specialist in scientific lubrication*, he knows how to keep machines up to capacity production by the proper application of quality textile mill lubricants.

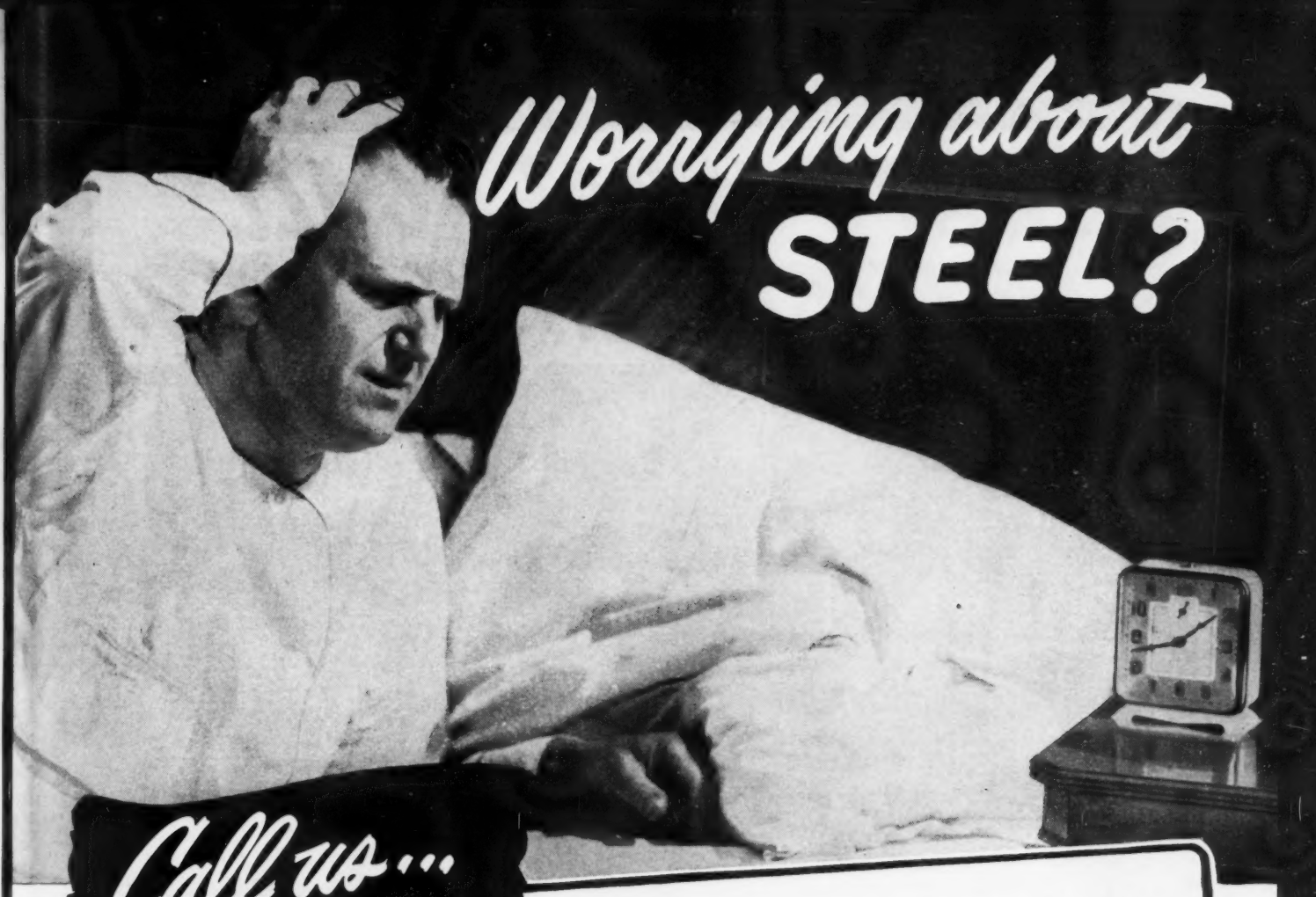
You get many other benefits, too, when the Gulf Service Engineer is "in the picture" in your mill. He can help you decrease end breakage, reduce fire hazard, and lower maintenance and power costs.

Call in a Gulf Service Engineer today and let his knowledge and experience go to work on your lubrication and maintenance problems. His practical recommendations are bound to result in some improvement in mill operating efficiency.

GULF INDUSTRIAL LUBRICATION

BACK THE ATTACK . . .
BUY MORE WAR BONDS!

GULF OIL CORPORATION • GULF REFINING COMPANY • GULF BUILDING, PITTSBURGH 30, PA.



Call us...

Like yours, our first job is to do all we can to speed war production. So, if you need steel, steel products, machinery and equipment, we'll get it to you quickly if at all possible—subject to priority requirements. A call to us has broken many a production bottleneck — helped speed many a war order.

Even today, our stocks are large. They include National Emergency Alloy Steels, which have proved so successful. Try us. We welcome your inquiries. Phone, write or wire our nearest warehouse.

For Welding Needs

We can supply Welding Wire, for electric arc welding, such as:

STAINLESS STEEL ELECTRODES
HARD-SURFACING ELECTRODES
MILD CARBON ELECTRODES

We also offer Welding Machines, Protect-O-Metal for elimination of weld spatter and Havens "C" Protected Clamps. Write, phone or wire our nearest warehouse.

UNITED STATES STEEL SUPPLY COMPANY

9 CONVENIENTLY LOCATED WAREHOUSES

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BALTIMORE (3),	Bush & Wicomico Sts., P. O. Box 2036	Teletype BA. 183	GILmore 3100
BOSTON (34),	176 Lincoln St., Allston, P. O. Box 42	Teletype BRTN. 10	STAdium 9400
CLEVELAND (14),	1394 E. 39th St.,	Teletype CV. 153	HEnderson 5750
MILWAUKEE (1),	4027 West Scott St., P. O. Box 2045	Teletype MI. 587	Mitchell 7500
NEWARK (1), N.J.,	Foot of Bessemer St., P. O. Box 479	Teletype NK. 74	Bigelow 3-5920
		REctor 2-6560	BErgen 3-1614
PITTSBURGH (12),	1281 Reedsdale St., N. S.	Teletype PG. 475	CEdar 7780
ST. LOUIS (3),	21st & Gratiot Sts., P. O. Box 27	Teletype SL. 384	MAin 5235
TWIN CITY,	2545 University Ave., St. Paul (4), Minn.	Teletype STP. 154	NEstor 2821

UNITED STATES STEEL SUPPLY COMPANY
USS
STEELS
SERVICE

UNITED STATES STEEL

THAT'S WHAT I CALL A LUBRICATION JOB

The LUBRIPLATE film is tough... the toughest lubricating film you have ever used. It holds contacting surfaces apart, even under the heaviest loads, thus effectively preventing progressive wear. Examination of a bearing surface lubricated with LUBRIPLATE always shows a mirror finish.

LUBRIPLATE is a most exceptional lubricant. It keeps friction down to a minimum, thus conserves power. It prevents rust and corrosion. Its effective life is longer than conventional lubricants, therefore it is more economical to use.

The remarkable achievements of LUBRIPLATE are told in the "LUBRIPLATE FILM." It contains case histories and general lubricating information written especially for your industry. Send for a copy today.

Rx FOR YOUR MACHINERY

No. 3—Ideal for general oil type lubrication. Ring oiled bearings, wick feeds, sight feeds and bottle oilers.

No. 8—Because of its high film strength and long life reflects outstanding performance in most types of enclosed gears (speed reducers).

No. 107—One of the most popular grease type products for general application by pressure gun or cups.

No. 70—For a wide range of grease applications, especially at temperatures above 200 degrees F.

No. 130-AA—Known nationwide as the superior lubricant for open gears, heavy duty bearings, wire rope, etc.

BALL BEARING—This is the LUBRIPLATE lubricant that has achieved wide acclaim for use in the general run of ball and roller bearings operating at speeds to 5000 RPM and temperatures up to 300 degrees F.

LUBRIPLATE DIVISION

FISKE BROTHERS REFINING COMPANY

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WRITE FOR THE NAME OF THE DEALER NEAR YOU

Sylvania Cellophane*

BRINGS FRUIT TO THE FIGHTING FRONTS

By releasing this page Ceglin Finish for Textiles makes it possible to present one of the many essential services being rendered by Sylvania Cellophane*

As components of Field Ration (Type-K) there is no telling when or where these fruit bars will go into action! But, *whenever* and *wherever* they do, they must be fresh, wholesome, tasty, satisfying and nourishing. Sylvania cellophane, in accordance with Army specifications to insure moisture-vapor-resistant wrapping, is used to preserve and protect contents.

ARMY E NAVY

SYLVANIA CELLOPHANE

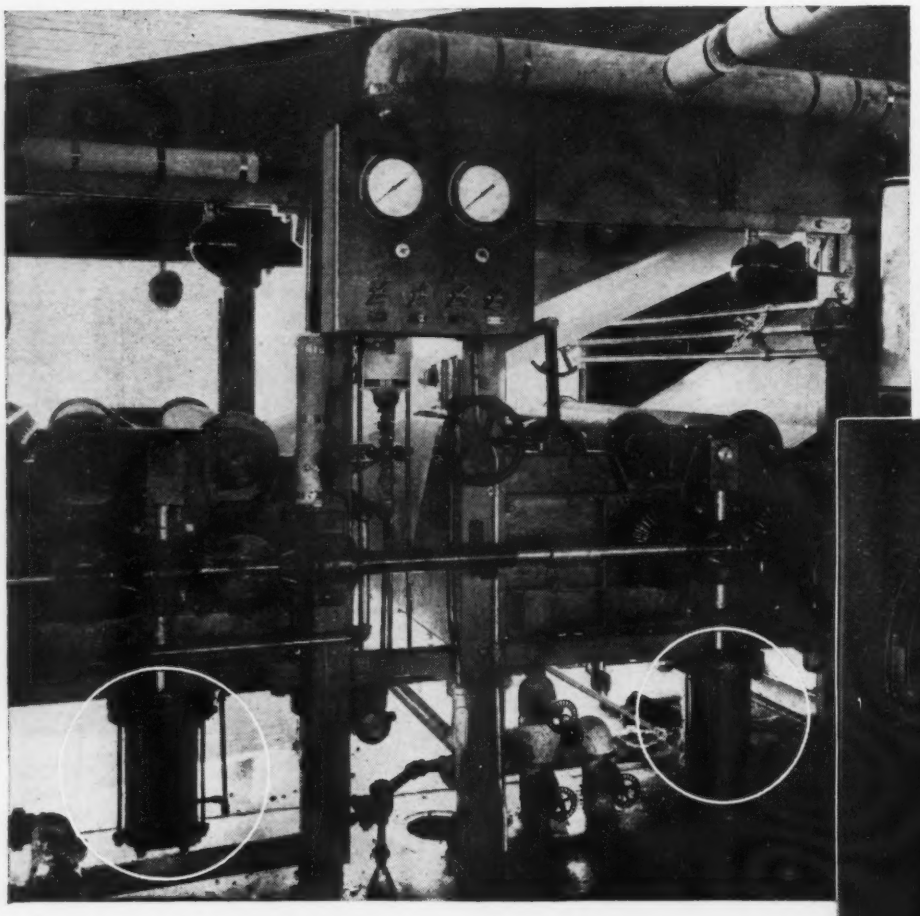
SYLVANIA INDUSTRIAL CORPORATION

General Sales Office: **122 East 42nd Street, New York 17, N. Y.**

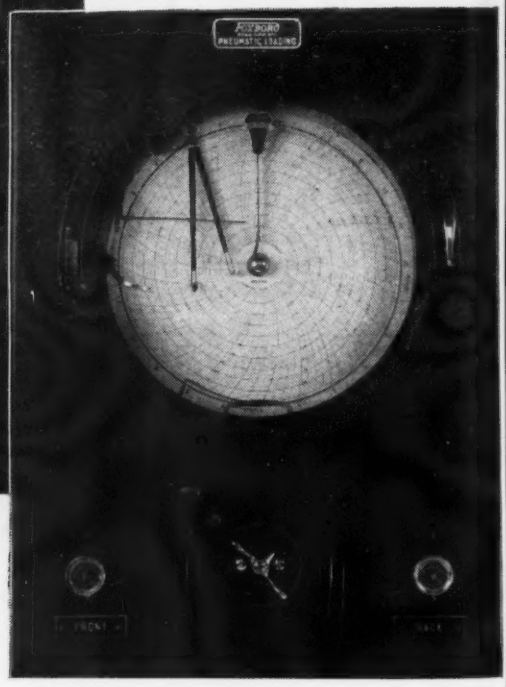
Works and Principal Office: **Fredericksburg, Virginia**

* Trade Mark Reg. U. S. Pat. Off.

BIGGEST ADVANCE EVER MADE
in Applying Roll Pressure!



Foxboro Pneumatic Loading on this slasher gives complete loading control from single panel (top center). Pressure cylinders for one end of rolls shown in circles. Recording model (below) also available.



Foxboro Pneumatic Loading gives calibrated "cushioned" pressure with fingertip control!

With a simple twist of two knobs on an instrument, you can exactly adjust and equalize the pressure at both ends of any pressure roll equipped with Foxboro Pneumatic Loading!

What's more, this exact pressure is then automatically maintained by the smooth "cushioned" action of air in pressure cylinders. Variations in material thickness and any out-of-roundness of rolls are automatically compensated. There's no bouncing of rolls to limit operating speed. And it takes but the flip of a lever to unload both ends of the roll *instantly!*

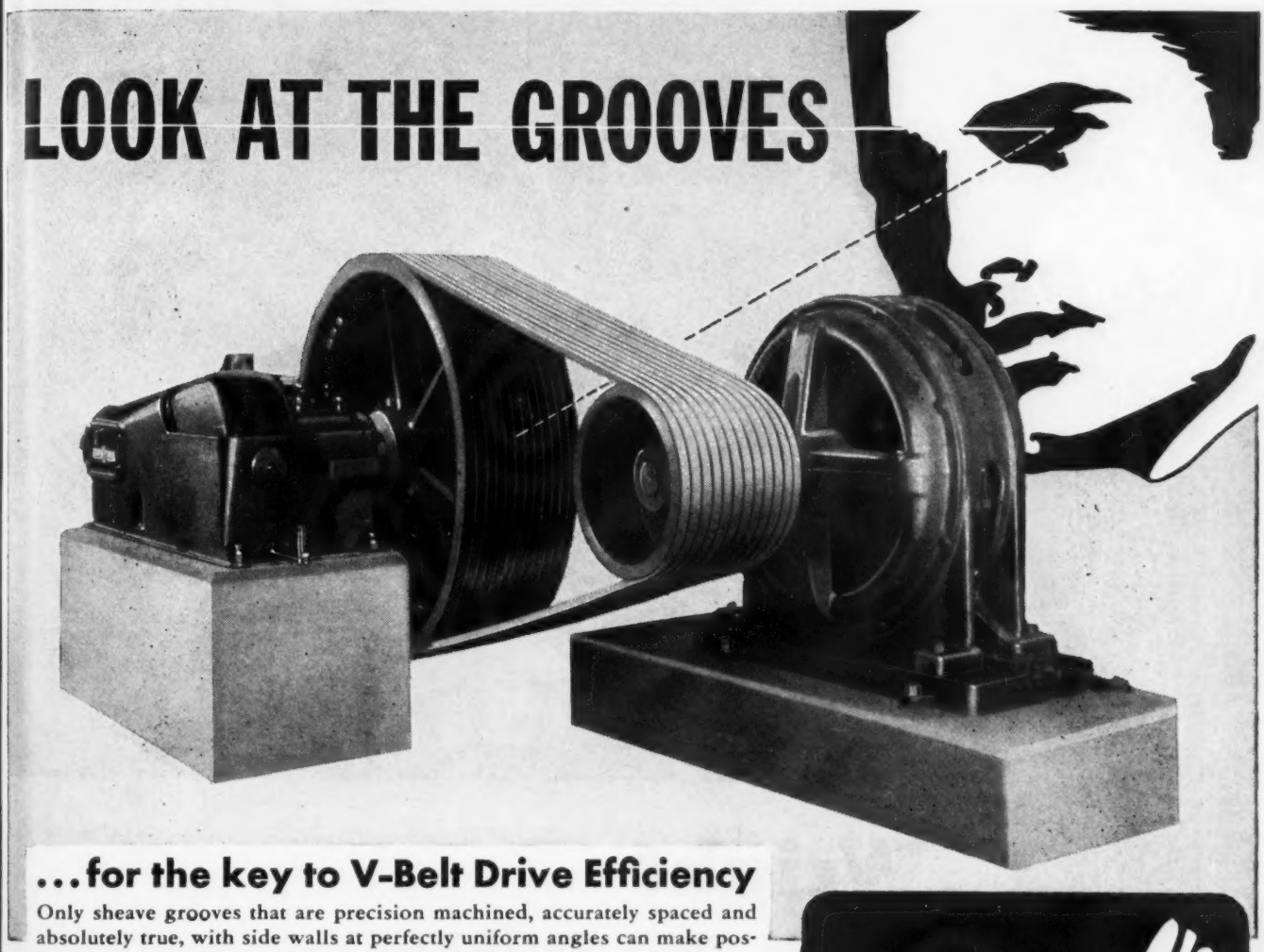
That is just a quick outline of the Foxboro development which is improving operation of slashers, dye padders, cloth washers, starch mangles and other squeeze roll machines. On extraction processes, Foxboro Pneumatic Loading produces greater overall extraction and closer control of final moisture content. On impregnation processes, it enables closer adjustment of the nip to insure thorough saturation and uniform removal of excess liquid.

Get full details of this important advance in roll loading. Write for Bulletin B-306. **The Foxboro Company, 84 Neponset Avenue, Foxboro, Mass., U. S. A.** Also Montreal, Canada. Branches in principal cities.

PNEUMATIC LOADING BY FOXBORO

REG. U. S. PAT. OFF.

LOOK AT THE GROOVES



...for the key to V-Belt Drive Efficiency

Only sheave grooves that are precision machined, accurately spaced and absolutely true, with side walls at perfectly uniform angles can make possible a really efficient V-Belt Drive. Wood's Sheaves are just that kind—engineered to provide for a snug fit and firm grip by the V-Belts.

The full molded belts on a Wood's drive are flexible and resilient matching the grooves perfectly. The harder the pull the greater their wedging action and the higher their percentage of efficiency . . . 98% is not uncommon.

There are large assortments of sheave sizes and standard V-Belts always on hand in Wood's warehouses. In most cases, requirements can be made up from stock drives for immediate shipments. Also special sheaves with extra weight for flywheel effect, bolting flanges and other special features to permit sheaves to form integral parts of customers' machines can be made from array of flexible patterns right here in Chambersburg. No extra expense to customer for pattern equipment. Our 64-Page V-Belt catalog describes fully the Wood's V-Belt Drive. Send for a copy.

Wood's
V-BELT
DRIVES

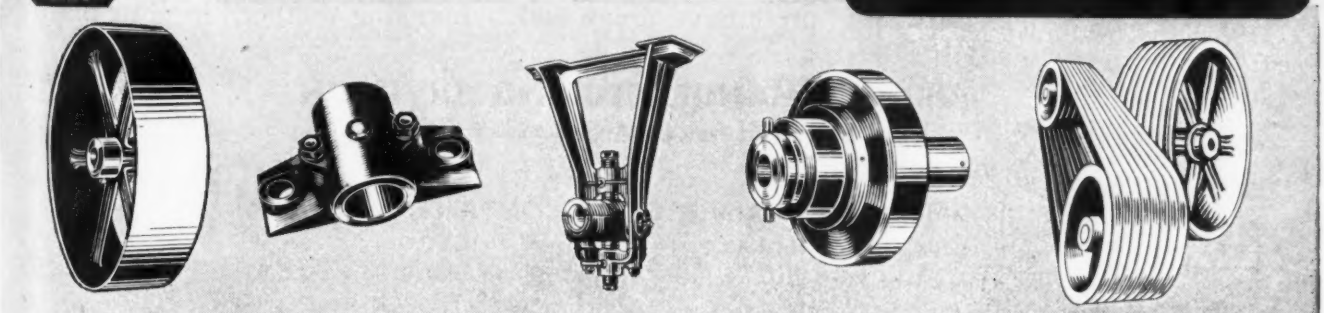
LONG LIFE LINE

EVERYTHING IN TRANSMISSION

Bearings — Collars — Clutches — Couplings — Contactors — Hangers — Pillow Blocks — Pulleys — V-Belt Sheaves and Complete Drives

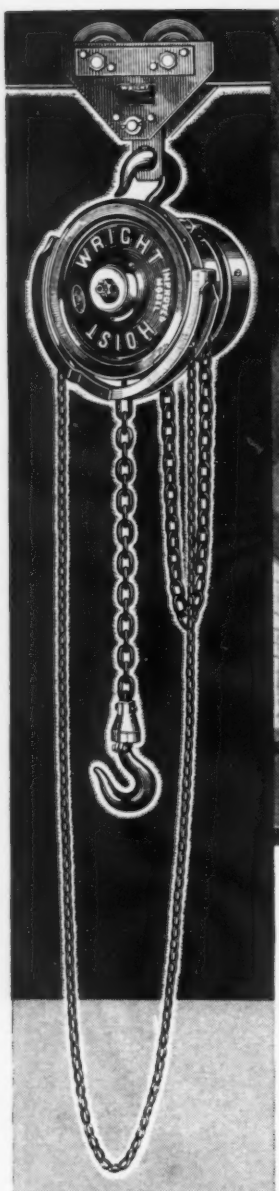
Some territories still open for alert distributors

MEMBER MULTIPLE V-BELT DRIVE ASSN.



T. B. WOOD'S SONS COMPANY, CHAMBERSBURG, PENNA.

BRANCHES: 387-391 ATLANTIC AVE., BOSTON, MASS. • 83 PLANE ST., NEWARK, N. J. • 425 FIRST AVE., PITTSBURGH, PA.



WRIGHT
Improved
High Speed
HOISTS

Wright

makes your ceiling your freight clearing yard . . .

For routing and distributing materials, **WRIGHT** Hoists and Cranes convert your plant ceiling into a clearing yard—where vertical and horizontal material-handling takes place speedily, safely and economically. **WRIGHT** Improved High Speed Hoists, **WRIGHT** *Speedway* Electric Hoists and **WRIGHT** Cranes turn idle ceilings into busy, productive areas and save time and money.

Whatever your handling problem may be, **WRIGHT** engineers and distributors are qualified and capable to give you helpful assistance. Look under "**HOISTS**" in your classified telephone directory for the name of your local **WRIGHT** distributor. He is a good man to consult about better material-handling methods in your plant.

WRIGHT MANUFACTURING DIVISION
York, Pa., Chicago, Denver, Los Angeles, San Francisco, Portland, New York

AMERICAN CHAIN & CABLE COMPANY, INC.
BRIDGEPORT · CONNECTICUT

ARMY E NAVY
FLYING OVER THE WRIGHT HOIST PLANT

ACCO

In Business for Your Safety

INVASION *and the* FINAL CHALLENGE

The idea that our national security some day would depend upon the successful invasion of continental Europe by our armed forces was inconceivable to the average American but a few short years ago. Yet, today our whole strength is assembled to that very action and for assuring a sound and permanent peace.

America became great without aggression . . . without tyranny. Our greatness has been achieved without destroying others . . . ours is a history of unprecedented industrial progress, of development of our own resources and reliance on our own efforts.

Aggression is foreign to American philosophy. Yet, today we find ourselves faced with the choice of destroying or being destroyed. Today we are confronted by the hard fact that the kind of peace which we all so fervently desire can be achieved only by crushing autocracy and by removing the causes of aggression.

We are now engaged in the accomplishment of the first objective. Since Pearl Harbor a complacent, peace-loving America—the largest of the "soft" and "decadent" democracies—has grown strong and tough. Out of the inherent virility of a free people we have moulded the mightiest force for invasion and attack that the world has ever seen.

We have reached our peak rates of war production. We are producing as much war equipment as all the rest of the world combined.

History will record our industrial mobilization as a phenomenal achievement.

The battle of production has been won!

The full might of our armed forces and those of our allies unleashed against the Axis war machine will bring eventual victory. Two and a half years of intensive preparation, backed by 168 years of growth as a free nation, has given us superiority over twenty years of painstaking preparation by the totalitarian and militaristic countries with their enslaved peoples.

Every American has contributed toward this powerful offensive. Our manufacturers and business leaders have exerted their fullest efforts. Our industries have mobilized their tremendous resources—tapped to the fullest degree their inventive and productive genius. The men and women in the factories, on the farms, and in the mills and mines have played a magnificent

part in the tremendous production program. Citizens all are making their contribution to the armed victory that lies ahead

We have demonstrated that a free people under a free enterprise economy can unite in a common purpose.

* * *

When the war is won, we shall be faced by our second objective . . . removing the causes of aggression. This is a social challenge. A challenge to those who would sacrifice our democratic way of life for personal gains or foreign ideologies.

The best insurance for the continuance of our democracy is a successful democracy. That means a dynamic and not a static democracy. All of us who want to preserve the ideals that have made America . . . and that includes all but a handful of extremists . . . must determine to find the policies and programs which will permit us to make the most of the abundance nature has provided for us.

To achieve this end we must recognize the fact that we are but a wheel in the machinery of world economy. A wheel that must drive or be driven. A wheel that must mesh smoothly with the many other wheels or be stripped of its cogs.

We are the only nation on earth free enough and strong enough to shape the mould of its own destiny. We can be hampered by nothing but our own confusion.

* * *

The mind and the heart of all America today brood over the shores of Britain and watch over the narrow waters that wash the beaches of the Continent. And the prayers of all America go with each of those who embark upon that epic passage.

Those of us at home who are producing the fighting tools and who are so earnestly concerned with the problems that will face a postwar America, should see now, even if we may never have seen it before, that all our plans will be worth just exactly what the men and women who make that passage are prepared, competent, and inspired by their leadership to make them worth.

For those men and women are America!

They have gone out from rich homes and poor homes alike, from farms and factories, from schools and churches, from mines and ranches, from offices and studios, to take their places in the battle line. They are a cross-section of the America that is to be.

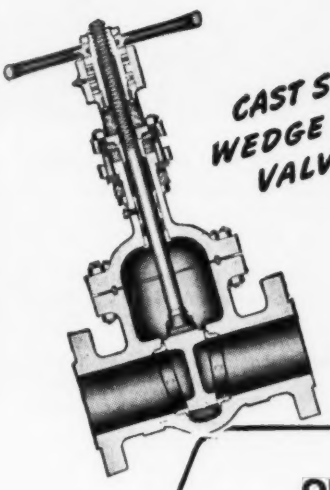
Whoever may draw the plans for that America, it is those men and women who will make the plans good. Invasion is their first step toward that end. May their work be speedily done, and may our plans be worthy of that work.

James H. McGraw, Jr.

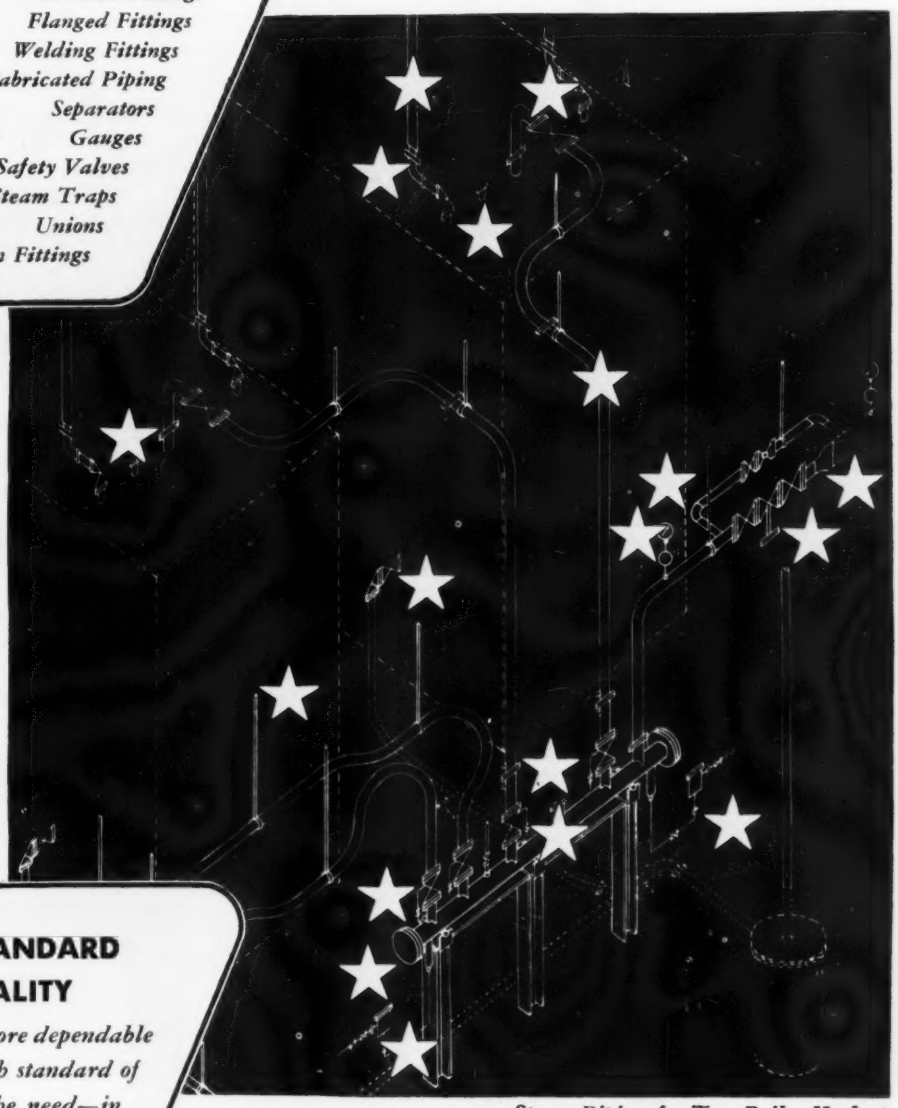
President, McGraw-Hill Publishing Company, Inc.

Steam Plant Piping Systems - - CRANE can equip them 100%

Pipe
Pipe Bends, Flanged and Welded
Automatic Stop Check Valves
Pipe Supports
Gaskets and Studs
Gate Valves
Globe Valves
Flanges
Reducers
Screwed Fittings
Flanged Fittings
Welding Fittings
Fabricated Piping
Separators
Gauges
Safety Valves
Steam Traps
Unions
Union Fittings



CAST STEEL WEDGE GATE VALVES



Steam Piping for Two-Boiler Hook-up

ONE STANDARD OF QUALITY

The whole system is more dependable because there's one high standard of quality—adequate for the need—in every part. In Crane Steel Gate Valves, for example: Straight-through ports minimize turbulence, erosion, resistance to flow. Strong tee-head disc-stem connection, ball-bearing yoke, and non-corrosive stem bearings assure smoothest operation. Adequate stem power and extra long disc guides make seating positive.

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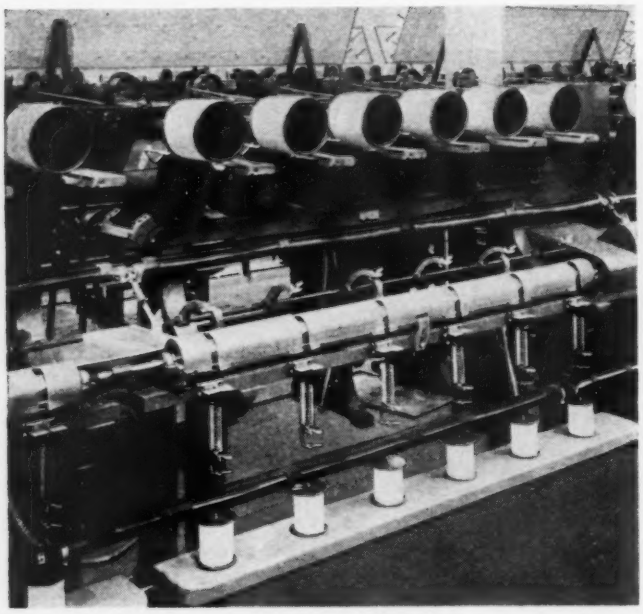
This is the equipment you'll need when Nylon goes back on legs

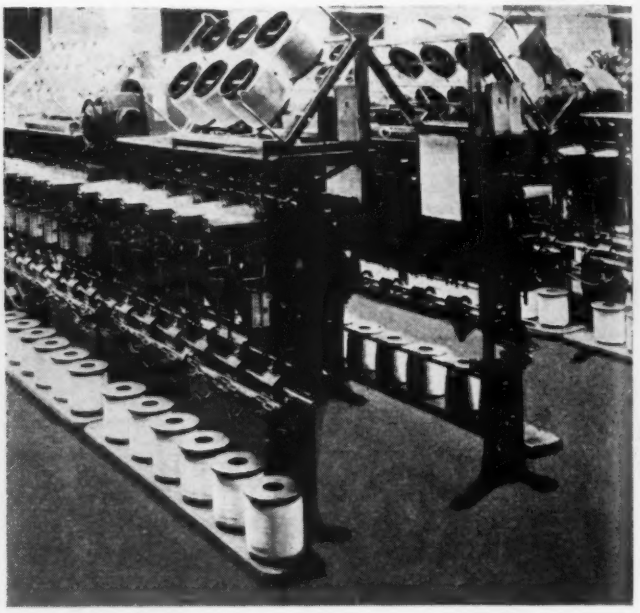


This is the machine that sizes the yarn

The Universal No. 250 Nylon Sizing Machine applies a definitely-controlled percentage of size and winds onto large-diameter tubes in which the yarn is evenly and thinly distributed for rapid and uniform conditioning.

Tension is applied *before* sizing. Since the yarn travels almost in a straight line and since the change in yarn speed is slight, there is little variation in tension.

The machine is extremely rugged and has few moving parts — with the result that vibration is virtually eliminated. Use of four winds across the traverse limits yarn oscillation and reduces the movement of reciprocating parts, thus minimizing wear.



This is the machine that winds the knitting cone

The Universal No. 50 Winding Machine applies an emulsion to the yarn in easily-controlled amounts and then, by means of the Universal Pineapple Cone Attachment, winds pineapple cones of predetermined shape.

Tension remains low. The yarn travels up from the supply tube, through an auxiliary tension guide and past the Emulsion Roll in nearly a straight line. Yarn contact points are few in order to minimize friction.

The simple Pineapple Cone Attachment designed for this machine has the Roller Bail, kept true-running by the reinforced Roller Bail Holder.

This is the sizing tube

The tapered ends, produced by the "scatter-wind", provide free delivery on the coning machine.

No re-draw is necessary.

This is the knitting package

The Pineapple Cone is considered the ideal shape for a package supplying knitting machines with nylon yarns.

There is a choice of ten shapes.

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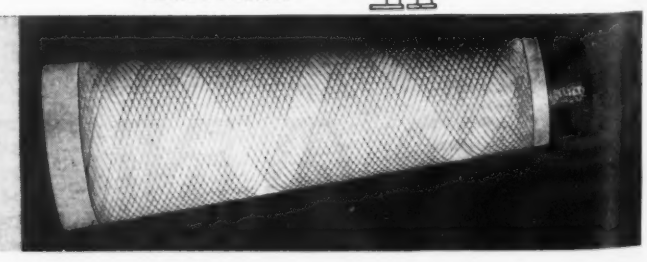
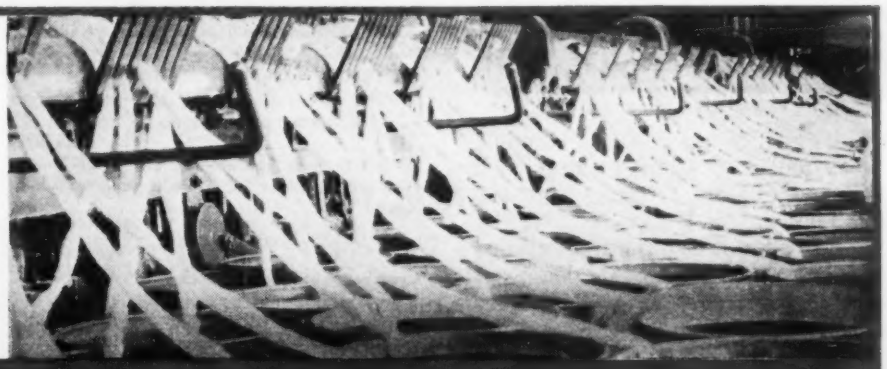


Speed and Accuracy in Calculating ROVING PRODUCTION



By FRITZ ZWEIFEL
H & B American Machine Co.
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HIGHLIGHTS: Tables Allow for Interference, Piecing, Flyer Picking, and Week-End Cleaning—Formulas Make Data Applicable to All Makes of Frames.

Photograph by J. W. Stuart

PRODUCTION TABLES for roving frames now generally used make a standard allowance of 15 min. per set for doffing and other incidental shut-downs. While tables thus computed may be adequate, they are not—in our opinion—accurate, because if a 15-min. allowance for doffing and incidental shut-downs is correct for a 10 x 5 making, let's say, 1.00-hank roving, it does not necessarily follow that this same time allowance can be applied with the same degree of accuracy in the case of an 8 x 4 making, for the sake of the argument, 3.50- or 4.00-hank roving.

A roving frame, like any other frame, does not run 100% of the time. In the first place, it has to be stopped at regular intervals for doffing—and, secondly, stops every once in a while for other reasons—such as piecing-up broken ends, changing gears, cleaning flyers, etc. All of these stops cause a definite loss in production, which is proportionate to the number of spindles that are affected by stoppages and the length of time these spindles remain idle. This is evident because a 100-spindle frame can be doffed in a much shorter time than a 168-spindle frame, as common sense tells us that the chances of broken ends are almost twice as great on the latter frame as on the former. From this, it follows that time allowed for doffing and incidental shut-downs should be gaged accurately if the production of such machines is to be forecast with any degree of accuracy.

The author wishes to express his gratitude to Carrol B. Little, superintendent, Whitney Mills, Inc., Whitney, S. C., who helped him particularly in compiling the table of doffing and incidental stops.

INCIDENTAL STOPS. In the following pages, production tables are explained with the thought in mind that accurate production forecasts are most desirable. They differ from the usual production tables in that the time it takes for doffing and the time a frame is stopped for other reasons are not combined. It will be noticed that the actual production is based on doffing times ranging from 8 to 15 min.

Incidental shut-downs are listed in table on next page, called "Table of Doffing and Incidental Stops." In this table each cause for a shut-down is evaluated according to the number of spindles on the frame—the values being expressed in percentages of the running time. The factors found in this table are explained in greater detail as follows:

1. *Time Allowed for Doffing.* This represents the time that it takes to doff a frame, including picking of flyers. The shortest frame shown has 90 spindles with an 8-min. time allowance for doffing and picking flyers. The number of spindles is stepped up by 10—each 10 spindles taking one extra minute for doffing. An exception is made at the 120- and 130-spindle tabulations where 11 min. were assumed for frames of both lengths. The longest frame shown has 170 spindles and takes 15 min. to doff.

2. *Interference.* "Interference" is known as time lost on a machine because of the inability of the operator to service it immediately. Operators may not always be able to service a frame right away for a number of reasons. For instance, they may be busy on another frame or have absented themselves from their jobs temporarily. The time elapsing between the shutting down of the frame and the operator arriving back at the scene is called "interference" and should not be confused with the time spent by the operator getting the frame into running order again. Time lost because of interference is expressed in percentage of the running time and varies with the length of the frame. The following values have been assumed:

Frames from 90 to 119 spdl.
lose 4% or 2.4 min. per hr.
Frames from 120 to 139 spdl.
lose 5% or 3.0 min. per hr.
Frames from 140 to 159 spdl.
lose 5.5% or 3.3 min. per hr.
Frames from 160 to 170 spdl.
lose 6% or 3.6 min. per hr.

3. *Piecings.* It is safe to assume that piecing broken ends has to be done occasionally, no matter what frame or drafting system is used (ends down, anyhow, are very seldom caused by mechanical defects of the frame itself but are mostly due to faulty slivers). Time lost in piecing is also expressed in percent of the running time, and also varies in accordance with the length of the frame. For this cause of shut-down, we have assumed the following values:

Frames from 90 to 119 spdl.
lose 3.30% or 1.98 min. per hr.
Frames from 120 to 139 spdl.
lose 4.50% or 2.70 min. per hr.
Frames from 140 to 149 spdl.
lose 5.00% or 3.00 min. per hr.
Frames from 150 to 170 spdl.
lose 5.50% or 3.30 min. per hr.

4. *Week-end Cleaning.* This column

Speed and Accuracy in Calculating ROVING PRODUCTION (Continued)

besides considering week-end cleaning, covers repairs of a minor nature such as changing gears, replacing worn top rolls, unwinding lap-ups, etc. A flat 2% loss of running time is assumed in this case regardless of the length of the frame. Hence, every 40-hr. week a frame loses 48 min.

5. *Pick Flyers.* Picking flyers, as already pointed out, is done when the frame is shut-down for doffing. On combed stock or rayon staple, however—particularly on lighter rovings—it often becomes necessary, because of excessive shedding, to doff flyers between regular doffs. Many mills do it—others don't; hence it is left entirely up to the mill whether or not to use this figure, which also varies according to length of the frame.

Frames from 130 to 149 spdl.
lose 2.50% or 1.50 min per hr.
Frames from 150 to 170 spdl.
lose 3.00% or 1.80 min. per hr.

USE OF TABLES. Calculations of actual pounds of production and percent efficiency per spindle can best be shown by actual problems. Assume for instance, on carded stock, that a roving size of 1.45-hank, with a 1.30 twist multiple is being run on a 10 x 5 High-Draft slubber of 110 spindles. Then the actual calculations would be:

Doffing time for a 110-spdl. frame (see Table of Doffing and Incidental Stop)	10 min.
Production per spindle in 10 hr. of 1.45 h. r. (See TABLE I)	6.82 lb.
Deduct from above figure 9.30%, which represents total % incidental stops	63 lb.
Actual production per spindle per 10 hr.	6.19 lb.

To find the percent efficiency, take actual production and divide by 100% production, found in TABLE I. Thus:

$$\frac{6.19}{7.38} = .838 \text{ or about } 84\%$$

Again assuming combed stock and a roving size of 5 hank with a twist multiple of 1.30 run on a High-Draft slubber of 160 spindles, the actual production per spindle would be:

Doffing time for a 160-spdl. frame (see Table of Doffing and Incidental Stops)	14 min.
Production per spdl. in 10 hr. of 5.00 h. r. (See TABLE IV)	1.432 lb.
Deduct from above figures 16.50%, which represents total % incidental stops	.236 lb.
Actual production per spdl. per 10 hr.	1.196 lb.

Then again percent efficiency equals actual production divided by 100% production, found in TABLE IV. Thus:

$$\frac{1.196}{1.50} = .797 \text{ or about } 80\%$$

In figuring production on rayon staple, assume that a 2.50-hank roving is being run on a 9 x 4½ High-Draft slubber of 120 spindles with a 1.00 twist multiple, and a 1⅜-in. front roll. The calculation for actual production per spdl. would be:

Doffing time for a 120-spdl. frame (see Table of Doffing and Incidental Stops)	11 min.
Production per spindle in 10 hr. of 2.50 h. r. (See TABLE VI)	4.44 lb.
Deduct from above figure 11.50%, which represents total % incidental stops	.51 lb.
Actual production per spindle per 10 hour	3.93 lb

Then, as before, percent efficiency equals actual production divided by 100% production, found in TABLE VI. Thus:

$$\frac{3.93}{4.79} = .82 \text{ or } 82\%$$

CONVERSIONS. Since every mill man has his own ideas about twist, front-roll speed, spindle speed, etc., it seems impractical to work out a set of production tables that could be used universally without need of adjustments. In the present case, for instance, the cotton tables were figured on the basis of a 1⅛-in. front roll and 1.30 twist multiple, and the rayon tables with 1⅜-in. front-roll and 1.00 twist multiple. Spindle speeds for both cotton and rayon are: 850, 950, 1050, and 1100 r. p. m. for 10 x 5, 9 x 4½, 8 x 4, and 8 x 3⅝ slubbers, respectively. These figures were assumed chiefly because they are standards with which the writer is well acquainted, and should not be construed as a blanket recommendation in preference to standards mills are using now. A few simple rules can be followed by which the production figures given in these tables can be converted to fit every existing condition. The results thus obtained will be just as accurate as the figures given in the tables. These are the rules:

RULE 1: Work out the production by means of these tables disregarding all discrepancies between your standards and those used in the tables. Find efficiency.

RULE 2: Convert 100% efficiency production—found in table—to suit your front roll, twist multiple, etc.

RULE 3: Multiply this figure by efficiency found under RULE 1, and the result is the actual production of the frame under consideration.

Conversion Formulas. For easy conversion of the production tables, the number of formulas are suggested as follows:

No. 1. Different Front-Roll Diameter:

$$\frac{100\% \text{ prod. x new front-roll dia.}}{\text{old front-roll dia.}} = \text{prod. of new frame}$$

No. 2. Different Front-Roll Speed:

$$\frac{100\% \text{ prod. x new front-roll speed}}{\text{old front-roll speed}} = \text{prod. on new frame}$$

No. 3. Different Spindle Speed:

$$\frac{100\% \text{ production x new spindle speed}}{\text{old spindle speed}} = \text{prod. on new frame}$$

No. 4. Different Twist Multiple:

$$\frac{100\% \text{ prod. x old twist multiple}}{\text{new twist multiple}} = \text{prod. on new frame}$$

No. 5. Different Bobbin Weight:
(heavier or lighter)

$$\frac{\text{Length of doff in min. x weight new bobbin}}{\text{Weight old bobbin}} = \text{prod. on new frame}$$

Table of Doffing and Incidental Stops

Number of Spindles per Frame	Time Allowed for Doffing	Interference	Piecings	Week-end Cleaning	Picking Flyers Combed Stock & *Rayon Staple	Total % Incidental Stops	
						Carded & *Rayon Staple	Combed
	Minutes	%	%	%	%	%	%
90	8	4.00	3.30	2.00		9.30	9.30
100	9	4.00	3.30	2.00		9.30	9.30
110	10	4.00	3.30	2.00		9.30	9.30
120	11	5.00	4.50	2.00		11.50	11.50
130	11	5.00	4.50	2.00	2.50	11.50	14.00
140	12	5.50	5.00	2.00	2.50	12.50	15.00
150	13	5.50	5.50	2.00	3.00	13.00	16.00
160	14	6.00	5.50	2.00	3.00	13.50	16.50
170	15	6.00	5.50	2.00	3.00	13.50	16.50

Note: Deduct the total percentage of incidental stops from the production found in production Tables I through VIII, making sure that production is read under the correct number of minutes allowed for doffing.
*Where picking of flyers on rayon staple between doffs is done, use figures in column headed "Combed"

The above figures are not intended to be the last word in research, nor are they supposed to be irrefutably correct. As a matter of fact, it is readily admitted that these figures are only approximations, will not suit every mill, and in many cases will call for adjustments. Some mills may know from experience that they can doff more quickly than we anticipate, and some mills know that it takes them longer. In both cases the mill should use whatever doffing time it knows to be correct. The same thing may be said for interference, piecings, week-end cleaning, and picking of flyers. The above basic table, however, is a good starting point for mills to work out a table of "Incidental Stops" of their own to suit their conditions.

Table I. Slubber Production—10 Hr.—1⅛-In. Front Roll—10 x 5, High Draft, 4- and 5-Roll

Stock on Full Bobbin, 24 oz.—Spindle Speed, 850 R.P.M.—T. M., 1.30

Hank Roving	Twist per Inch	R.P.M. Front Roll	Duration of:		100% Production		Actual Production on Following Time Allowance per Doff (in minutes)							
			One Doff	1 Lb. of Sliver*	Hk.	Lb.	8	9	10	11	12	13	14	15
.90	1.23	195	0:59	39	13.73	15.26	13.43	13.23	13.04	12.86	12.68	12.50	12.33	12.16
.95	1.27	191	1:04	43	13.37	14.07	12.50	12.33	12.16	12.00	11.84	11.69	11.54	11.39
1.00	1.30	185	1:09	46	13.04	13.04	11.69	11.54	11.39	11.25	11.11	10.98	10.84	10.71
1.05	1.33	181	1:15	50	12.72	12.00	10.84	10.71	10.59	10.46	10.34	10.23	10.11	10.00
1.10	1.36	177	1:20	53	12.38	11.25	10.23	10.11	10.00	9.89	9.78	9.68	9.57	9.47
1.15	1.39	173	1:25	57	12.18	10.59	9.68	9.57	9.47	9.38	9.28	9.18	9.09	9.00
1.20	1.42	169	1:31	61	11.87	9.89	9.09	9.00	8.91	8.82	8.74	8.66	8.57	8.49
1.25	1.45	166	1:37	65	11.60	9.28	8.57	8.49	8.41	8.33	8.26	8.18	8.11	8.04
1.30	1.48	162	1:42	68	11.47	8.82	8.18	8.11	8.04	7.96	7.89	7.83	7.76	7.69
1.35	1.51	159	1:49	73	11.15	8.26	7.69	7.63	7.56	7.50	7.44	7.38	7.32	7.26
1.40	1.54	156	1:55	77	10.96	7.83	7.32	7.26	7.20	7.14	7.09	7.03	6.98	6.92
1.45	1.57	153	2:02	81	10.70	7.38	6.92	6.87	6.82	6.77	6.72	6.67	6.62	6.57
1.50	1.59	151	2:08	85	10.56	7.04	6.62	6.57	6.52	6.48	6.43	6.38	6.34	6.29
1.55	1.62	148	2:14	89	10.42	6.72	6.34	6.29	6.25	6.21	6.17	6.12	6.08	6.04
1.60	1.64	146	2:20	93	10.30	6.43	6.08	6.04	6.00	5.96	5.92	5.88	5.84	5.81
1.65	1.67	144	2:27	98	10.09	6.12	5.81	5.77	5.73	5.70	5.66	5.63	5.59	5.56
1.70	1.69	142	2:33	102	10.00	5.88	5.59	5.56	5.52	5.49	5.45	5.42	5.39	5.36
1.75	1.72	140	2:41	107	9.78	5.69	5.33	5.29	5.26	5.23	5.20	5.17	5.14	5.11
1.80	1.74	138	2:47	111	9.70	5.39	5.14	5.11	5.08	5.06	5.03	5.00	4.97	4.95
1.85	1.77	136	2:54	116	9.58	5.18	4.95	4.92	4.89	4.86	4.84	4.81	4.79	4.76
1.90	1.79	134	3:01	121	9.44	4.97	4.76	4.74	4.71	4.69	4.66	4.64	4.62	4.59
1.95	1.82	132	3:10	126	9.24	4.74	4.55	4.52	4.50	4.48	4.46	4.43	4.41	4.39
2.00	1.84	131	3:16	129	9.18	4.59	4.41	4.39	4.37	4.35	4.33	4.31	4.29	4.26

* Expressed in minutes.

Table II. Slubber Production—10 Hr.—1⅛-In. Front Roll—9 x 4½, High Draft, 4- and 5-Roll

Stock on Full Bobbin, 18 oz.—Spindle Speed, 1,050 R.P.M.—T. M., 1.30

Hank Roving	Twist per Inch	R.P.M. Front Roll	Duration of:		100% Production		Actual Production on Following Time Allowance per Doff (in minutes)							
			One Doff	1 Lb. of Sliver*	Hk.	Lb.	8	9	10	11	12	13	14	15
1.50	1.59	169	1:25	76	11.90	7.94	7.26	7.18	7.10	7.03	6.96	6.89	6.82	6.75
1.55	1.62	166	1:30	80	11.61	7.49	6.89	6.82	6.75	6.68	6.62	6.55	6.49	6.43
1.60	1.64	164	1:35	84	11.36	7.10	6.55	6.49	6.43	6.37	6.31	6.25	6.19	6.14
1.65	1.67	161	1:39	88	11.25	6.82	6.31	6.25	6.19	6.14	6.08	6.03	5.97	5.92
1.70	1.69	159	1:43	92	11.15	6.56	6.08	6.03	5.97	5.92	5.87	5.82	5.77	5.72
1.75	1.72	156	1:48	96	10.94	6.25	5.82	5.77	5.72	5.67	5.63	5.58	5.53	5.49
1.80	1.74	154	1:52	100	10.85	6.03	5.63	5.58	5.53	5.49	5.44	5.40	5.36	5.31
1.85	1.77	152	1:58	105	10.58	5.72	5.36	5.31	5.27	5.23	5.19	5.15	5.11	5.07
1.90	1.79	150	2:02	108	10.50	5.53	5.19	5.15	5.11	5.07	5.04	5.00	4.96	4.94
1.95	1.82	147	2:08	114	10.25	5.27	4.98	4.94	4.89	4.86	4.82	4.79	4.75	4.72
2.00	1.84	146	2:12	117	10.21	5.11	4.82	4.79	4.75	4.72	4.69	4.65	4.62	4.60
2.05	1.86	144	2:17	122	10.11	4.93	4.65	4.62	4.60	4.56	4.53	4.50	4.47	4.44
2.10	1.88	143	2:21	125	10.06	4.79	4.53	4.50	4.47	4.44	4.41	4.38	4.35	4.32
2.15	1.90	141	2:28	132	9.80	4.56	4.33	4.30	4.27	4.25	4.22	4.19	4.17	4.14
2.20	1.93	139	2:33	136	9.70	4.41	4.19	4.17	4.14	4.12	4.09	4.07	4.04	4.02
2.25	1.95	138	2:37	140	9.67	4.30	4.09	4.07	4.04	4.02	3.99	3.97	3.95	3.92
2.30	1.97	136	2:42	144	9.59	4.17	3.97	3.95	3.92	3.90	3.88	3.86	3.84	3.81
2.35	1.99	135	2:47	148	9.49	4.04	3.86	3.84	3.81	3.79	3.77	3.75	3.73	3.71
2.40	2.01	133	2:53	154	9.36	3.90	3.73	3.71	3.69	3.67	3.65	3.63	3.61	3.59
2.45	2.03	132	2:59	159	9.24	3.77	3.61	3.59	3.57	3.56	3.53	3.52	3.50	3.48
2.50	2.06	130	3:05	164	9.13	3.65	3.50	3.48	3.46	3.44	3.43	3.41	3.39	3.38
2.55	2.08	129	3:10	169	9.08	3.56	3.41	3.39	3.38	3.36	3.34	3.33	3.31	3.29
2.60	2.10	128	3:16	174	8.94	3.44	3.31	3.29	3.28	3.26	3.25	3.23	3.21	3.20

* Expressed in minutes.

Speed and Accuracy in Calculating ROVING PRODUCTION (Continued)

Note: In the above formulas the term "old" applies to standards found in these tables, and "new" to standards which are being used by the mill.

The bobbin weight does not influence the production to a great extent, provided, of course, that all other factors are the same. A bobbin with more roving will take longer to fill up. Hence, a doff will last longer and, consequently, there will be less doffs per day. This will increase the production to a certain extent.

To show the use of these formulas the two problems below are worked out in steps.

PROBLEM 1: Assume 3.00-hank roving, combed stock, is run on an 8 x 4 slubber of 152 spindles with a spindle speed of 1000 r.p.m., a twist multiple of 1.15, a front-roll diameter of 1⅛ in., and a full-bobbin weight of 16 oz. Find actual production.

First Step: Work out production by means of tables, disregarding all discrepancies between your standards and those used in the tables. Find efficiency.

Doffing time for a 152-spdl. frame (see Table of Doffing and Incidental Stops)	13 min.
Production per spindle in 10 hr. of 3.00 h. r. (see TABLE III)	2.87 lb.
Deduct from above figure 16%, which represents total % incidental stops.	.46 lb.
Actual production in 10 hr	2.41 lb.

Efficiency equals actual production divided by 100% production, found in TABLE III. Thus:

$$\frac{2.41}{3.09} = .78 \text{ or } 78\%$$

Second Step: Convert 100% production found on table to suit your mill conditions.

100% production of 3.00-hank roving (see TABLE III) ..... 3.09 lb.
Old spindle speed 1050 r. p. m. New spindle speed 1000 r. p. m.
Old twist multiple 1.30 New twist multiple 1.15

$$\frac{3.09 \times 1000 \times 1.30}{1050 \times 1.15} = 3.33 \text{ lb. in 10 hr. per spindle (100\% production)}$$

Third Step: Multiply this figure by efficiency found under RULE 1.

3.33 x .78 = 2.60 lb. actual production

PROBLEM 2: Assume 4.50-hank roving run on an 8 x 3⅝ frame of 168 spindles using long-staple rayon, 1¼ in. front roll, .80 twist multiple, and a spindle speed of 1000 r.p.m. Find the actual production and efficiency of the frame.

First Step:

Doffing time for a 168-spindle frame (see Table of Doffing and Inci-

Table III. Slubber Production — 10 Hr. — 1⅛-In. Front Roll, 8 x 4, High Draft, 4- and 5-Roll

Stock on Full Bobbin, 14 oz.—Spindle Speed, 1,050 R.P.M.—T. M., 1.30

Hank Roving	Twist per Inch	R.P.M. Front Roll	Duration of: One Doff	Duration of: 1 Lb. of Sliver*	100% Production Hk.	100% Production Lb.	Actual Production on Following Time Allowance per Doff (minutes) 8	9	10	11	12	13	14	15
2.00	1.84	162	1:33	106	11.30	5.65	5.20	5.15	5.10	5.05	5.00	4.95	4.91	4.86
2.05	1.86	160	1:36	110	11.21	5.47	5.05	5.00	4.95	4.91	4.86	4.82	4.77	4.73
2.10	1.88	158	1:40	114	11.03	5.25	4.86	4.82	4.77	4.73	4.69	4.65	4.61	4.56
2.15	1.91	157	1:43	118	10.97	5.10	4.73	4.69	4.65	4.61	4.56	4.53	4.49	4.45
2.20	1.93	155	1:47	122	10.80	4.91	4.56	4.53	4.49	4.45	4.41	4.38	4.34	4.30
2.25	1.95	153	1:51	127	10.64	4.73	4.41	4.38	4.34	4.30	4.27	4.23	4.20	4.17
2.30	1.97	151	1:54	130	10.60	4.61	4.30	4.27	4.23	4.20	4.17	4.13	4.10	4.07
2.35	1.99	149	1:58	135	10.46	4.45	4.17	4.13	4.10	4.07	4.04	4.01	3.98	3.95
2.40	2.01	148	2:02	139	10.34	4.30	4.04	4.01	3.98	3.95	3.92	3.89	3.86	3.83
2.45	2.03	146	2:05	143	10.29	4.20	3.95	3.92	3.89	3.86	3.83	3.81	3.78	3.75
2.50	2.06	144	2:10	149	10.10	4.04	3.81	3.78	3.75	3.72	3.70	3.67	3.65	3.62
2.55	2.08	142	2:14	153	10.00	3.92	3.70	3.67	3.65	3.62	3.60	3.57	3.55	3.52
2.60	2.10	141	2:18	158	9.88	3.80	3.60	3.57	3.55	3.52	3.50	3.48	3.45	3.43
2.65	2.12	140	2:22	163	9.81	3.70	3.50	3.48	3.45	3.43	3.41	3.39	3.37	3.34
2.70	2.14	138	2:26	167	9.72	3.60	3.41	3.39	3.37	3.34	3.32	3.30	3.28	3.26
2.75	2.16	137	2:30	172	9.63	3.50	3.32	3.30	3.28	3.26	3.24	3.22	3.20	3.18
2.80	2.18	136	2:34	176	9.55	3.41	3.24	3.22	3.20	3.18	3.16	3.14	3.12	3.11
2.85	2.20	135	2:38	181	9.46	3.32	3.16	3.14	3.12	3.11	3.09	3.07	3.05	3.03
2.90	2.21	134	2:42	185	9.40	3.24	3.09	3.07	3.05	3.03	3.02	3.00	2.98	2.96
2.95	2.23	133	2:46	190	9.32	3.16	3.02	3.00	2.98	2.97	2.95	2.93	2.92	2.90
3.00	2.25	132	2:50	194	9.27	3.09	2.95	2.93	2.92	2.90	2.88	2.87	2.85	2.84
3.10	2.29	130	2:59	204	9.08	2.93	2.81	2.79	2.78	2.76	2.75	2.73	2.72	2.70
3.20	2.33	128	3:08	215	8.92	2.79	2.68	2.66	2.65	2.64	2.63	2.61	2.60	2.59
3.30	2.36	126	3:16	224	8.84	2.68	2.57	2.56	2.55	2.54	2.52	2.51	2.50	2.49
3.40	2.40	123	3:26	236	8.67	2.55	2.45	2.44	2.43	2.42	2.41	2.40	2.39	2.37
3.50	2.43	122	3:34	244	8.58	2.45	2.36	2.35	2.34	2.33	2.32	2.31	2.30	2.29
3.60	2.47	121	3:44	256	8.42	2.34	2.26	2.25	2.24	2.23	2.22	2.21	2.20	2.19
3.70	2.50	119	3:53	266	8.32	2.25	2.18	2.17	2.16	2.15	2.15	2.13	2.12	2.11
3.80	2.53	117	4:02	276	8.25	2.17	2.10	2.09	2.08	2.07	2.06	2.055	2.05	2.04
3.90	2.57	116	4:13	290	8.17	2.07	2.01	2.00	1.995	1.985	1.98	1.977	1.966	1.96
4.00	2.60	114	4:22	300	8.00	2.00	1.94	1.935	1.93	1.925	1.915	1.908	1.90	1.895
4.10	2.63	113	4:32	311	7.91	1.93	1.88	1.87	1.86	1.855	1.845	1.84	1.835	1.83
4.20	2.66	111	4:41	321	7.85	1.87	1.82	1.81	1.80	1.798	1.79	1.785	1.78	1.77

* Expressed in minutes.

dental Stops)	15 min.
Production per spindle per hour of 4.50 h. r. (See TABLE VIII)	2.12 lb.
Less 16.50%, which represents total % incidental stops	.35 lb.
Actual production per spindle per 10 hr	1.77 lb.

Efficiency: $\frac{1.77}{2.28}$ = .78 or 78%

Second Step: 100% production of 4.50-hank roving (see TABLE VIII) 2.28 lb.

Old front roll 1-3/8-in. New front roll 1-1/4-in.
Old twist multiple 1.00 New twist multiple .80
Old spindle speed 1100 New spindle speed 1000

$\frac{2.28 \times 1.25 \times 1 \times 1000}{1.375 \times .80 \times 1100}$ = 2.35 lb. in 10 hr per spindle (100% production)

Third Step:

Actual production 2.35 x .78 = 1.83 lb. per spdl. in 10 hr.

FURTHER USE OF TABLES. Other uses to which the production tables can be put are for determining running time of a set and duration of a pound of sliver. *Duration of one "Doff":* It is well to know how long a "doff"—namely, the time elapsing between one doffing and the next—will last, or should last, particularly if any question should arise in connection with work loads and time study. In TABLE I through VIII, the duration of a "doff" is shown in the fourth column from the left and is expressed in hours and minutes. It should be remembered that this figure shows only how long it will take to fill up a bobbin. A "doff" lasts longer because a frame does not run all the time but is stopped for doffing, as well as for other reasons. Hence, if it is to be determined how long a "doff" actually lasts, and how many times per day a hand has to doff, it is necessary to take this into consideration. The easiest way to do this is to find first the efficiency of the frame and use the efficiency to correct the time given in the table. Hence, if it is found that the frame runs at 80% efficiency, we know that the frame is shut down 20% of the time, which means that we have to add 20% to the figure given in the Duration of One "Doff" column.

It should also be noted that, if the figures in any table are used, the weight of the bobbin made in the mill has to coincide with the weight used when compiling the table. If they don't, the figures should be corrected using conversion formula No. 5 for Different Bobbin Weight, viz.:

$$\frac{\text{Length of "doff" in min. x weight new bobbin}}{\text{Weight old bobbin}}$$

To clarify the above, assume that a 2.10-hank roving of rayon staple is being run on a 120-spindle, 9 x 4½ frame with a 1⅜-in. front roll, a 1.00

Table IV. Slubber Production — 10 Hr. — 1⅛-In. Front Roll, 8 x 3⅝, High Draft, 4- and 5-Roll

Stock on Full Bobbin, 12 oz.—Spindle Speed, 1,100 R.P.M.—T. M., 1.30

Hank Roving	Twist per Inch	R.P.M. Front Roll	Duration of:		100% Production		Actual Production on Following Time Allowances per Doff (in minutes)							
			One Doff	1 Lb. of Sliver*	Hk.	Lb.	8	9	10	11	12	13	14	15
2.50	2.06	151	1:46	141	10.63	4.25	3.95	3.91	3.88	3.85	3.81	3.78	3.75	3.72
2.55	2.08	149	1:49	145	10.53	4.13	3.85	3.81	3.78	3.75	3.72	3.69	3.66	3.63
2.60	2.10	148	1:53	150	10.35	3.98	3.72	3.69	3.66	3.63	3.60	3.57	3.54	3.52
2.65	2.12	146	1:56	155	10.28	3.88	3.63	3.60	3.57	3.54	3.52	3.49	3.46	3.44
2.70	2.14	145	1:59	159	10.21	3.78	3.54	3.52	3.49	3.46	3.44	3.41	3.38	3.36
2.75	2.16	144	2:02	163	10.15	3.69	3.46	3.44	3.41	3.38	3.36	3.33	3.31	3.29
2.80	2.18	142	2:06	168	10.00	3.57	3.36	3.33	3.31	3.29	3.26	3.24	3.21	3.19
2.85	2.20	141	2:09	172	9.95	3.49	3.29	3.26	3.24	3.21	3.19	3.17	3.15	3.13
2.90	2.21	140	2:12	176	9.89	3.41	3.22	3.19	3.17	3.15	3.13	3.10	3.08	3.06
2.95	2.23	139	2:16	181	9.76	3.31	3.13	3.10	3.08	3.06	3.04	3.02	3.00	2.98
3.00	2.25	138	2:19	185	9.72	3.24	3.06	3.04	3.02	3.00	2.98	2.96	2.94	2.92
3.10	2.29	136	2:26	195	9.55	3.08	2.92	2.90	2.88	2.87	2.85	2.83	2.81	2.80
3.20	2.33	134	2:34	205	9.34	2.92	2.78	2.76	2.74	2.73	2.71	2.69	2.68	2.66
3.30	2.36	132	2:41	214	9.24	2.80	2.66	2.65	2.63	2.62	2.60	2.59	2.57	2.56
3.40	2.40	129	2:48	224	9.11	2.68	2.55	2.54	2.53	2.51	2.50	2.49	2.47	2.46
3.50	2.43	128	2:55	233	8.99	2.57	2.46	2.45	2.43	2.42	2.41	2.39	2.38	2.37
3.60	2.47	126	3:03	244	8.86	2.46	2.36	2.34	2.33	2.32	2.31	2.30	2.28	2.27
3.70	2.50	124	3:11	254	8.73	2.36	2.26	2.25	2.24	2.23	2.22	2.21	2.20	2.18
3.80	2.53	123	3:18	264	8.63	2.27	2.18	2.17	2.16	2.15	2.14	2.13	2.12	2.11
3.90	2.57	121	3:27	276	8.46	2.17	2.09	2.08	2.07	2.06	2.05	2.045	2.04	2.03
4.00	2.60	119	3:34	285	8.40	2.10	2.03	2.02	2.01	2.00	1.99	1.98	1.97	1.96
4.10	2.63	118	3:42	296	8.32	2.03	1.967	1.95	1.935	1.93	1.92	1.915	1.905	1.90
4.20	2.66	116	3:50	307	8.23	1.967	1.89	1.883	1.875	1.867	1.86	1.85	1.844	1.836
4.30	2.70	115	3:59	319	8.08	1.883	1.82	1.815	1.807	1.80	1.79	1.785	1.78	1.77
4.40	2.73	114	4:08	331	7.96	1.815	1.755	1.75	1.744	1.737	1.73	1.724	1.72	1.71
4.50	2.76	112	4:16	342	7.92	1.76	1.704	1.698	1.69	1.685	1.68	1.672	1.666	1.66
4.60	2.79	111	4:24	352	7.82	1.704	1.654	1.648	1.642	1.635	1.63	1.625	1.62	1.61
4.70	2.82	110	4:33	364	7.76	1.65	1.60	1.595	1.59	1.584	1.579	1.573	1.568	1.562
4.80	2.85	109	4:42	376	7.68	1.60	1.55	1.545	1.54	1.535	1.53	1.525	1.52	1.515
4.90	2.88	108	4:51	388	7.60	1.545	1.504	1.50	1.495	1.49	1.485	1.48	1.475	1.47
5.00	2.91	107	5:00	400	7.50	1.50	1.461	1.456	1.452	1.447	1.442	1.437	1.432	1.428
5.10	2.94	106	5:09	412	7.45	1.46	1.419	1.415	1.41	1.406	1.40	1.397	1.393	1.388
5.20	2.96	105	5:17	423	7.38	1.42	1.384	1.376	1.376	1.371	1.367	1.363	1.36	1.355

* Expressed in minutes.

Table V. Slubber Production — 10 Hr. — 1⅜-In. Front Roll, 10 x 5, High Draft, 4- and 5-Roll

Stock on Full Bobbin, 24 oz.—Spindle Speed, 850 R.P.M.—T. M., 1.00

Hank Roving	Twist per Inch	R.P.M. Front Roll	Duration of		100% Production		* Actual Production Based on Following Time Allowances per Doff (in minutes)							
			One Doff	1 Lb. of Sliver*	Hk.	Lb.	8	9	10	11	12	13	14	15
.90	.95	207	0:45	30	18.00	20.00	16.98	16.67	16.36	16.07	15.79	15.52	15.25	15.00
.95	.97	203	0:49	33	17.44	18.36	15.79	15.51	15.24	15.00	14.75	14.51	14.28	14.06
1.00	1.00	196	0.53	35	16.98	16.98	14.75	14.51	14.28	14.06	13.85	13.64	13.43	13.23
1.05	1.02	192	0:57	38	16.58	15.79	13.85	13.64	13.43	13.23	13.04	12.86	12.68	12.50
1.10	1.05	187	1:02	41	15.96	14.51	12.86	12.68	12.50	12.33	12.16	12.00	11.84	11.69
1.15	1.07	183	1:06	44	15.69	13.64	12.16	12.00	11.84	11.69	11.55	11.39	11.25	11.11
1.20	1.10	180	1:10	47	15.43	12.86	11.56	11.39	11.25	11.11	10.98	10.84	10.71	10.59
1.25	1.12	175	1:15	50	15.00	12.00	10.84	10.71	10.59	10.47	10.34	10.23	10.11	10.00
1.30	1.14	172	1:19	53	14.81	11.39	10.34	10.22	10.11	10.00	9.89	9.78	9.68	9.57
1.35	1.16	169	1:24	56	14.46	10.71	9.78	9.68	9.57	9.47	9.38	9.28	9.18	9.09
1.40	1.18	166	1:28	59	14.31	10.22	9.38	9.28	9.18	9.09	9.00	8.91	8.82	8.73
1.45	1.20	163	1:33	60	14.04	9.68	8.91	8.82	8.73	8.65	8.57	8.49	8.41	8.33
1.50	1.22	161	1:38	65	13.77	9.18	8.49	8.41	8.33	8.26	8.18	8.11	8.04	7.96
1.55	1.24	158	1:43	69	13.53	8.73	8.11	8.04	7.96	7.89	7.83	7.76	7.69	7.63
1.60	1.26	156	1:48	72	13.33	8.33	7.76	7.69	7.63	7.56	7.50	7.44	7.38	7.32
1.65	1.28	153	1:53	75	13.13	7.96	7.44	7.38	7.32	7.26	7.20	7.14	7.09	7.04
1.70	1.30	151	1:58	79	12.97	7.63	7.14	7.09	7.04	6.98	6.92	6.87	6.82	6.77
1.75	1.32	149	2:03	82	12.81	7.32	6.87	6.82	6.77	6.72	6.67	6.62	6.57	6.52
1.80	1.34	146	2:09	86	12.56	6.98	6.57	6.52	6.47	6.43	6.38	6.34	6.29	6.25
1.85	1.36	145	2:14	89	12.43	6.72	6.34	6.29	6.25	6.21	6.16	6.12	6.08	6.04
1.90	1.38	143	2:20	93	12.22	6.43	6.08	6.04	6.00	5.96	5.92	5.88	5.84	5.81
1.95	1.40	141	2:26	97	12.01	6.16	5.84	5.81	5.77	5.73	5.70	5.66	5.63	5.59
2.00	1.41	139	2:30	100	12.00	6.00	5.70	5.66	5.63	5.59	5.56	5.52	5.49	5.45

* Expressed in minutes.

Table VI. Slubber Production — 10 Hr. — 1⅜-In. Front Roll, 9 x 4½, High Draft 4- and 5-Roll

Stock on Full Bobbin, 18-oz.—Spindle Speed, 950 R.P.M.—T. M., 1.00

Hank Roving	Twist per Inch	R.P.M. Front Roll	Duration of:		100% Production		Actual Production Based on Following Time Allowances per Doff (in minutes)							
			One Doff	1 Lb. of Sliver*	Hk.	Lb.	8	9	10	11	12	13	14	15
1.50	1.22	180	1:06	59	15.33	10.22	9.12	9.00	8.88	8.77	8.65	8.54	8.44	8.33
1.55	1.24	177	1:09	61	15.16	9.78	8.77	8.65	8.54	8.44	8.33	8.23	8.13	8.04
1.60	1.26	175	1:12	64	15.00	9.38	8.44	8.33	8.23	8.13	8.04	7.94	7.85	7.76
1.65	1.28	172	1:16	67	14.65	8.88	8.04	7.94	7.85	7.76	7.67	7.58	7.50	7.42
1.70	1.30	169	1:19	70	14.52	8.54	7.76	7.67	7.58	7.50	7.42	7.34	7.26	7.18
1.75	1.32	166	1:23	74	14.23	8.13	7.42	7.34	7.26	7.18	7.11	7.03	6.96	6.89
1.80	1.34	164	1:26	76	14.13	7.85	7.18	7.11	7.03	6.96	6.89	6.82	6.75	6.68
1.85	1.36	162	1:30	80	13.86	7.50	6.89	6.82	6.75	6.68	6.62	6.55	6.49	6.43
1.90	1.38	159	1:34	84	13.64	7.18	6.62	6.55	6.49	6.43	6.37	6.31	6.25	6.19
1.95	1.40	157	1:38	87	13.43	6.89	6.37	6.31	6.25	6.19	6.14	6.08	6.03	5.97
2.00	1.42	155	1:41	90	13.36	6.68	6.19	6.14	6.08	6.03	5.97	5.92	5.87	5.82
2.05	1.43	153	1:45	93	13.18	6.43	5.97	5.92	5.87	5.82	5.77	5.72	5.67	5.63
2.10	1.45	151	1:49	97	13.00	6.19	5.77	5.72	5.67	5.63	5.58	5.53	5.49	5.44
2.15	1.47	150	1:53	100	12.84	5.97	5.58	5.53	5.49	5.44	5.40	5.36	5.31	5.27
2.20	1.48	148	1:57	104	12.69	5.77	5.40	5.36	5.31	5.27	5.23	5.19	5.15	5.11
2.25	1.50	146	2:01	108	12.56	5.58	5.23	5.19	5.15	5.11	5.08	5.04	5.00	4.96
2.30	1.52	144	2:05	111	12.42	5.40	5.08	5.04	5.00	4.96	4.93	4.89	4.86	4.82
2.35	1.53	143	2:09	115	12.29	5.23	4.93	4.89	4.86	4.82	4.79	4.75	4.72	4.69
2.40	1.55	142	2:13	118	12.19	5.08	4.79	4.75	4.72	4.69	4.66	4.62	4.59	4.56
2.45	1.56	141	2:17	122	12.08	4.93	4.66	4.62	4.59	4.56	4.53	4.50	4.47	4.44
2.50	1.58	139	2:21	125	11.98	4.79	4.53	4.50	4.47	4.44	4.41	4.38	4.35	4.33
2.55	1.60	137	2:26	130	11.78	4.62	4.38	4.35	4.33	4.30	4.27	4.25	4.22	4.19
2.60	1.61	136	2:30	133	11.70	4.50	4.27	4.25	4.22	4.19	4.17	4.14	4.12	4.09

* Expressed in minutes.

Speed and Accuracy in Calculating ROVING PRODUCTION (Continued)

twist multiple, and a spindle speed of 950 r.p.m. How long does a doff last and how many times does a hand have to doff in an 8-hr. shift?

Doffing time for a 120-spdl. frame (see Table of Doffing and Incidental Stops)	11 min.
Production per spdl. in 10 hr. (see Table VI)	5.63 lb.
Less 11.50% total incidental stops	.65 lb.
Actual production per spindle in 10 hr.	4.98 lb.

$$\text{Efficiency} = \frac{4.98}{6.19} = .80\%$$

Duration of one "doff" (see Table VI column 4)

1 hr. 49 min.	or 109 min.
Plus 20% shut-down	or 22 min.
One doff will last	131 min.

$$\frac{480 \text{ min. a day}}{131 \text{ min. duration of one doff}} = 3.66 \text{ doffs a day}$$

Answer: A doff will last 133 min. (2 hr. and 13 min.) and a hand will doff the frame 3.66 times a day.

DURATION OF 1 LB. OF SLIVER. Figures found in the 5th column from the left help to determine the length of time a creel will last. If the frame runs 100% of the time, the duration of a creel depends entirely upon the quantity of sliver in a can (or roving on a bobbin), and inasmuch as the can contents vary greatly, it was decided to determine how long one lb. of sliver will last. This figure, multiplied by the number of pounds of sliver in a can, will indicate the length of time a can (or creel) will last. We thought this to be more satisfactory than to try to assume an average number of pounds in a can. In this case, too, it should not be forgotten that the result will represent the running time of the frame—or the time a can will last if the frame were running all the time. Since a frame is stopped part of the time, because of doffing and incidental stops, this should be taken into consideration. In this case, too, as in the case of the duration of one doff, the easiest way to work it is to take the efficiency of the frame into consideration. Use the same example given under the subheading "Duration of One Doff" and, assuming the same conditions, see how long a creel will last. Thus: How long will a creel last when making 2.10-hank roving, and how many times will an operator have to creel during a 40-hr. week? As additional information, assume that a can contains 15 lb. of sliver.

One lb. of sliver will last 96 min. Hence: $96 \times 15 = 1440$ min. We have determined that the frame runs at 80% efficiency, which means that 20% of the time the frame is shut

Table VII. Slubber Production — 10 Hr. — 1⅜-In. Front Roll, 8 x 4, High Draft, 4- and 5-Roll

Stock on Full Bobbin, 14-oz.—Spindle Speed, 1,050 R.P.M.—T. M., 100

Hank Roving	Twist per Inch	R.P.M. Front Roll	Duration of:		100% Production		Actual Production Based on Following Time Allowances per Doff (in minutes)							
			One Doff	1 Lb. of Sliver*	Hk.	Lb.	8	9	10	11	12	13	14	15
2.00	1.42	171	1:12	82	14.58	7.29	6.56	6.48	6.40	6.33	6.25	6.18	6.10	6.03
2.05	1.43	170	1:14	85	14.53	7.09	6.40	6.33	6.25	6.18	6.10	6.03	5.97	5.90
2.10	1.45	168	1:17	88	14.32	6.82	6.18	6.10	6.03	5.97	5.90	5.83	5.77	5.71
2.15	1.47	166	1:20	91	14.10	6.56	5.97	5.90	5.83	5.77	5.71	5.65	5.59	5.53
2.20	1.48	164	1:22	94	14.08	6.40	5.83	5.77	5.71	5.65	5.59	5.53	5.47	5.41
2.25	1.50	162	1:25	97	13.90	6.18	5.65	5.59	5.53	5.47	5.41	5.36	5.30	5.25
2.30	1.52	160	1:28	101	13.73	5.97	5.47	5.41	5.36	5.30	5.25	5.20	5.15	5.10
2.35	1.53	159	1:31	104	13.55	5.77	5.30	5.25	5.20	5.15	5.10	5.05	5.00	4.95
2.40	1.55	157	1:34	107	13.42	5.59	5.15	5.10	5.05	5.00	4.95	4.91	4.86	4.82
2.45	1.57	155	1:37	111	13.25	5.41	5.00	4.95	4.91	4.86	4.82	4.77	4.73	4.69
2.50	1.58	154	1:40	114	13.13	5.25	4.86	4.82	4.77	4.73	4.69	4.65	4.61	4.57
2.55	1.60	152	1:43	118	13.00	5.10	4.73	4.69	4.65	4.61	4.57	4.53	4.49	4.45
2.60	1.61	151	1:46	121	12.87	4.95	4.61	4.57	4.53	4.49	4.45	4.41	4.38	4.34
2.65	1.63	149	1:49	125	12.77	4.82	4.49	4.45	4.41	4.38	4.34	4.30	4.27	4.23
2.70	1.64	148	1:52	128	12.66	4.69	4.38	4.34	4.30	4.27	4.23	4.20	4.17	4.13
2.75	1.66	147	1:55	131	12.57	4.57	4.27	4.23	4.20	4.17	4.13	4.10	4.07	4.04
2.80	1.67	146	1:58	135	12.46	4.45	4.17	4.13	4.10	4.07	4.04	4.01	3.98	3.95
2.85	1.69	144	2:01	138	12.37	4.34	4.07	4.04	4.01	3.98	3.95	3.92	3.89	3.86
2.90	1.70	143	2:04	142	12.26	4.23	3.98	3.95	3.92	3.89	3.86	3.83	3.80	3.78
2.95	1.72	142	2:08	146	12.09	4.10	3.86	3.83	3.80	3.78	3.75	3.72	3.70	3.67
3.00	1.73	141	2:11	150	12.03	4.01	3.78	3.75	3.72	3.70	3.67	3.65	3.62	3.60
3.10	1.76	138	2:18	158	11.78	3.80	3.60	3.57	3.55	3.52	3.50	3.48	3.45	3.43
3.20	1.79	136	2:24	164	11.68	3.65	3.45	3.43	3.41	3.39	3.36	3.34	3.32	3.30
3.30	1.82	134	2:31	173	11.48	3.48	3.30	3.28	3.26	3.24	3.22	3.20	3.18	3.16
3.40	1.84	132	2:38	180	11.28	3.32	3.16	3.14	3.13	3.11	3.09	3.07	3.05	3.03
3.50	1.87	130	2:45	188	11.13	3.18	3.03	3.02	3.00	2.98	2.97	2.95	2.93	2.92
3.60	1.90	128	2:52	197	10.98	3.05	2.92	2.90	2.88	2.87	2.85	2.84	2.82	2.81
3.70	1.92	126	2:59	204	10.84	2.93	2.81	2.79	2.78	2.76	2.75	2.73	2.72	2.70
3.80	1.95	124	3:07	214	10.67	2.81	2.69	2.68	2.66	2.65	2.64	2.63	2.61	2.60
3.90	1.97	123	3:14	222	10.53	2.70	2.60	2.59	2.57	2.56	2.55	2.54	2.52	2.51
4.00	2.00	121	3:22	231	10.40	2.60	2.50	2.49	2.48	2.46	2.45	2.44	2.43	2.42
4.10	2.02	119	3:29	239	10.29	2.51	2.42	2.41	2.40	2.39	2.37	2.36	2.35	2.34
4.20	2.05	115	3:37	248	10.16	2.42	2.33	2.32	2.31	2.30	2.29	2.28	2.27	2.26

* Expressed in minutes.

Speed and Accuracy in Calculating ROVING PRODUCTION (Concluded)

down. Hence, we will have to add 20% to above figures:

	1,440 min.
Plus 20% lost time	288 min.
One can (or creel) will last	1,728 min. (or 28 hr. 48 min.)

Number of creels per week (40 hr.)

Answer: A can will last 28 hr. 48 min. and a hand will have to creel 1.38 times per week of 40 hr.

A PRACTICAL PROBLEM: And now to solve a problem which might arise in a mill. Assume a 4.00-hank roving of rayon staple is being run on an 8 x 4 slubber of 160 spindles with a 1¼-in. front roll, a .85 twist multiple, and a spindle speed of 1,100 r.p.m. The weight of a full bobbin is 16 oz., and the total weight of sliver in a can is 17 lb.

What production per spindle can be expected?
What will the efficiency be?
How long will a "doff" last?
How long will a creel last?
How many times per 40-hr. week will a hand have to doff and how many time creel?

Doffing time for a 160-spdl. frame (see Table of Doffing and Incidental Stops)	14 min.
Production per spindle per 10 hr. (see Table VII)	2.43 lb.
Less 16.50% total incidental stops	40. lb.
Actual production per spdl. per 10 hr.	2.03 lb.

$$\text{Efficiency} = \frac{2.03}{2.60} = .78 \text{ or } 78\%$$

Conversion:

Front roll	Old 1⅛ in.	New 1¼ in.
Twist multiple	" 1.00	" .85
Spindle speed	" 1,050 r.p.m.	" 1,100 r.p.m.
Weight full bobbin	" 14 oz.	" 16 oz.

100% production 4.00-bank roving (see Table VII) ..... 2.60 lb.

$$100\% \text{ prod.} = \frac{2.60 \times 1.25 \times 1,100}{1.375 \times .85 \times 1,050} = 2.91 \text{ lb.}$$

Actual production 2.91 x .78 = 2.27 lb. per spdl. per 10 hr.

A doff will last 3:21	or 202 min.
Plus 22% shut-downs (78% efficiency)	44 min.
A doff will actually last	246 min.
	or 4 hr. 6 min.

A hand will doff in a 40-hr. week:

$$\frac{2400 \text{ min. per week}}{246 \text{ length of one "doff"}} = 9.8 \text{ doffs a week}$$

A can will last 231 min. x 17 = 3927 min.
Plus 22% shut-downs 864 min.
A creel will last 4791 min.
or 79 hr. 51 min.

A hand will have to creel in a 40-hr. week:

$$\frac{2400 \text{ min. per week}}{4791 \text{ duration of one creel}} = .501 \text{ creelings per week}$$

Answer:

Production of 4.00 h. r. per spdl. per 10 hr.	2.27 lb.
Efficiency	78%
A "doff" will last	4 hr. 6 min.
A creel will last	79 hr. 51 min.
A hand will have to doff in a 40-hr. week	9.8 times
A hand will have to creel in a 40-hr. week	.501 times

Table VIII. Slubber Production — 10 Hr. — 1⅜-In. Front Roll, 8 x 3⅝, High Draft, 4- and 5-Roll

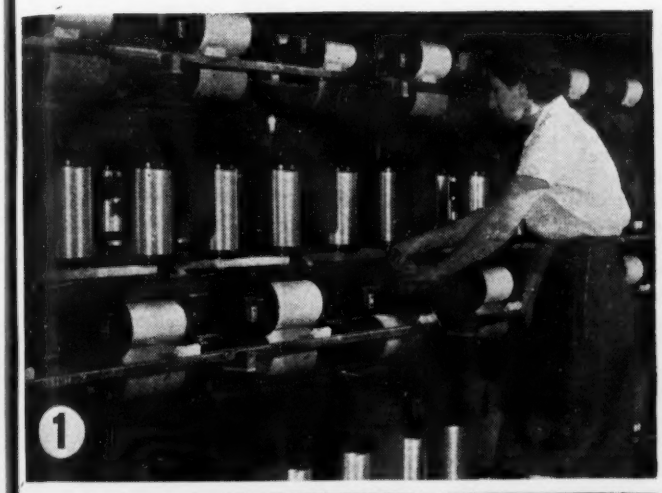
Stock on Full Bobbin, 12-oz.—Spindle Speed, 1,100 R.P.M.—T.M., 1.00

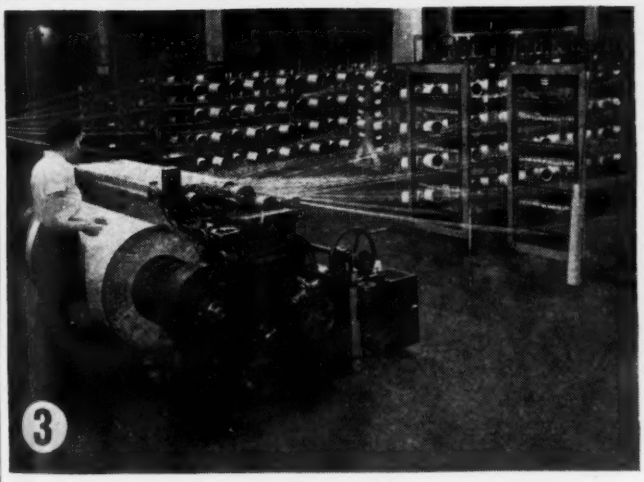
Hank Roving	Twist per Inch	R.P.M. Front Roll	Duration of:		100% Production		Actual Production Based on Following Time Allowances per Doff (in minutes)							
			One Doff	1 Lb. of Sliver*	Hk.	Lb.	8	9	10	11	12	13	14	15
2.50	1.58	161	1:21	108	13.90	5.56	5.06	5.00	4.94	4.89	4.84	4.79	4.74	4.69
2.55	1.60	159	1:24	112	13.64	5.35	4.89	4.84	4.79	4.74	4.69	4.64	4.59	4.55
2.60	1.61	158	1:26	114	13.60	5.23	4.79	4.74	4.69	4.64	4.59	4.55	4.50	4.46
2.65	1.63	156	1:29	119	13.41	5.06	4.64	4.59	4.55	4.50	4.46	4.41	4.37	4.33
2.70	1.64	155	1:31	121	13.34	4.94	4.55	4.50	4.46	4.41	4.37	4.33	4.28	4.25
2.75	1:66	153	1:34	125	13.17	4.79	4.41	4.37	4.33	4.28	4.25	4.21	4.17	4.13
2.80	1.67	152	1:36	127	13.13	4.69	4.33	4.28	4.25	4.21	4.17	4.13	4.09	4.05
2.85	1.69	151	1:39	132	12.97	4.55	4.21	4.17	4.13	4.09	4.05	4.02	3.98	3.95
2.90	1.70	150	1:42	136	12.79	4.41	4.09	4.05	4.02	3.98	3.95	3.91	3.88	3.85
2.95	1.72	148	1:44	139	12.76	4.33	4.02	3.98	3.95	3.91	3.88	3.85	3.82	3.78
3.00	1.73	147	1:47	143	12.63	4.21	3.91	3.88	3.85	3.82	3.78	3.75	3.72	3.69
3.10	1.76	145	1:52	149	12.46	4.02	3.75	3.72	3.69	3.66	3.63	3.60	3.57	3.54
3.20	1.79	142	1:58	157	12.22	3.82	3.57	3.54	3.52	3.49	3.46	3.44	3.41	3.38
3.30	1.82	140	2:04	165	11.98	3.63	3.41	3.38	3.36	3.33	3.31	3.29	3.26	3.24
3.40	1.84	138	2:09	172	11.87	3.49	3.29	3.26	3.24	3.21	3.19	3.17	3.15	3.13
3.50	1.87	136	2:15	180	11.66	3.33	3.15	3.13	3.10	3.08	3.06	3.04	3.02	3.00
3.60	1.90	134	2:21	188	11.48	3.19	3.02	3.00	2.98	2.96	2.94	2.92	2.90	2.88
3.70	1.92	133	2:26	195	11.40	3.08	2.92	2.90	2.88	2.87	2.85	2.83	2.81	2.80
3.80	1.95	131	2:33	204	11.17	2.94	2.80	2.78	2.76	2.74	2.73	2.71	2.69	2.68
3.90	1.97	129	2:38	210	11.11	2.85	2.71	2.70	2.68	2.66	2.65	2.63	2.62	2.60
4.00	2.00	127	2:45	220	10.92	2.73	2.60	2.59	2.57	2.56	2.54	2.53	2.51	2.50
4.10	2.02	126	2:51	228	10.78	2.63	2.51	2.50	2.49	2.47	2.46	2.45	2.43	2.42
4.20	2.05	124	2:57	236	10.67	2.54	2.43	2.42	2.41	2.39	2.38	2.37	2.36	2.34
4.30	2.07	123	3:03	244	10.58	2.46	2.36	2.34	2.33	2.32	2.31	2.30	2.28	2.27
4.40	2.10	121	3:10	254	10.43	2.37	2.27	2.26	2.25	2.24	2.23	2.22	2.21	2.20
4.50	2.12	120	3:17	263	10.26	2.28	2.20	2.18	2.17	2.16	2.15	2.14	2.13	2.12
4.60	2.14	119	3:23	270	10.21	2.22	2.13	2.12	2.11	2.10	2.09	2.08	2.07	2.06
4.70	2.17	117	3:30	280	10.05	2.14	2.06	2.05	2.045	2.04	2.03	2.02	2.01	2.00
4.80	2.19	116	3:37	289	9.94	2.07	2.00	1.99	1.98	1.97	1.965	1.956	1.95	1.94
4.90	2.21	115	3:43	298	9.90	2.02	1.95	1.935	1.93	1.92	1.91	1.905	1.90	1.89
5.00	2.23	114	3:51	306	9.76	1.95	1.88	1.875	1.87	1.86	1.85	1.845	1.84	1.843
5.10	2.26	112	3:58	317	9.64	1.89	1.83	1.82	1.815	1.807	1.80	1.79	1.785	1.78
5.20	2.28	111	4:04	325	9.59	1.845	1.785	1.78	1.77	1.765	1.755	1.75	1.745	1.74

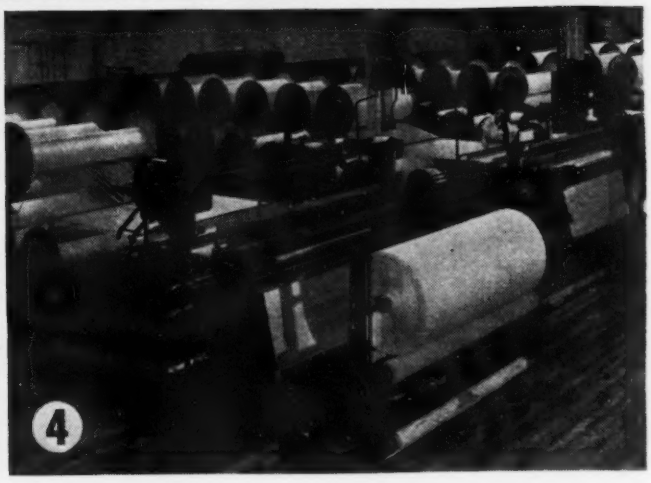
* Expressed in minutes.

RAYON TIRE CORD PRODUCTION

Rayon cord tire on a Liberator stands almost as tall as the mechanic. *Official Army Air Forces Photo*







1—High tenacity yarn is taken directly from two continuous process bobbins and twisted simultaneously. The two strands are wound parallel on a twist spool on this two-bank machine.

2—Here the two parallel strands are cable-twisted into finished tire cord as they pass upward to the horizontal spools.

3—The spools of plied and twisted Tyron cord are beamed from creels as shown above; beams carry about 1000 lb.

4—Cord for the tire fabric produced in Industrial Rayon Corp's. new weaving department at Cleveland is supplied to each loom from a number of beams simultaneously, and is loosely interlaced with a fine filling thread. Ends from several beams are interlaid so that uniform tension may be maintained. The fabric is shipped to tire manufacturers in rolls of up to 1000 yards.

HIGH TENACITY RAYON made by the continuous process, introduced by Industrial Rayon Corp. six years ago, is now spun, twisted and woven in coordinated operations at the company's Cleveland plant, with reported gains in production efficiency and in quality of tire cord fabric. The 1100 denier yarn is spun, stretched, washed, treated, dried, given a preliminary twist and wound on bobbins, ready for cord twisting when it leaves the continuous process machines. In only two additional steps the yarn is twisted and plied and ready for warping and weaving. Other methods now in use elsewhere involve additional or different processes. The pictures, presented by courtesy of Industrial Rayon Corp., show the steps after the yarn has left the initial spinning and treating machine. The company's Cleveland plant, which is using these methods on a production basis of 11,000,000 lb. annually, is being enlarged to an ultimate capacity of 20,000,000 lb. Additions to its Painesville plant will provide another 22,000,000 lb. capacity for high-tenacity tire yarn, cord, and fabric. The expansion program at these plants is proceeding under WPB directives to meet demands for military vehicles and aircraft tires.

SAFETY COLOR CODE

HIGHLIGHTS: Accidents Reduced by Adoption of a System for Identifying Haz-

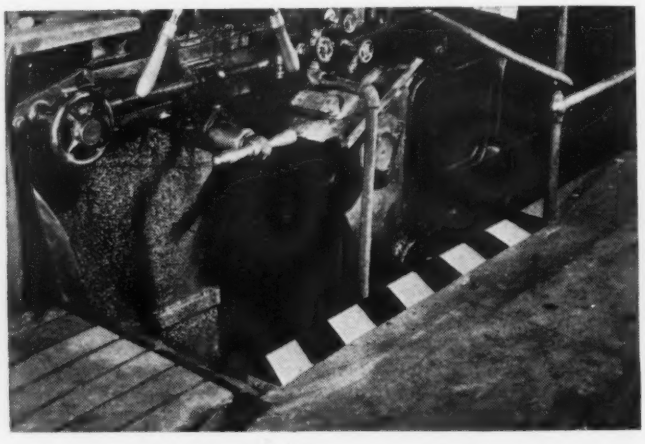
The safety green symbol on wall identifies location of various sorts of first aid equipment.

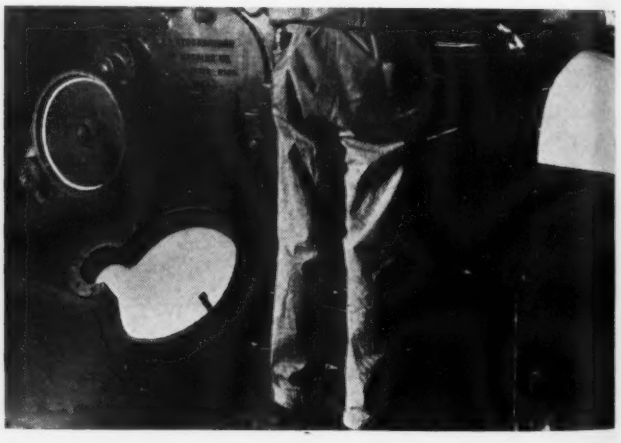
TEXTILE MILL APPLICATION OF COLORS

High Visibility YELLOW	*Alert* ORANGE	*Safety* GREEN
Trucking equipment Conveyors and Aisles at hazard points Edges of loading platforms and pits Railings; Low beams Floor pan edges Aisle obstructions Protruding parts Curbins; Dead ends Stairway approaches Floor level changes Chain hoist blocks Risers of off-standard steps	*Exposed parts:* Pulleys Gears on pickers, looms, etc. Cutting devices, and shears Rollers *Interior surfaces of:* Electrical switch boxes Fuse boxes Power boxes Machinery guards	*To identify:* First aid rooms Stretchers Cabinets for gas masks Cabinets for respirators Cabinets for medical supplies Safety showers for chemical burns

Lower left—High visibility yellow is used to mark falling and tripping hazards, as illustrated.

Below—Alert orange indicates exposed gears, wheels and other extreme hazards; also under machine guard.





SAFETY IN TEXTILE MILLS means increased production. Time lost through direct and indirect accidents during 1943 amounted to 370,000,000 man-days. It is estimated that the textile industries share of the tremendous loss in man-days will amount to over 11,600,000 man-days. This figure, given in man-days lost is hard to visualize, but if this loss of time was applied to the woolen industry manufacturing 32-oz. Army overcoating, the results would be unbelievable. An accident—time-loss of 11,600,000 man-days is equivalent to the time required to process yarns for and to weave about 370,000,000 yd. of 32-oz. overcoating. Or, this yardage is equivalent to providing every soldier in the United States, British, and Russian armies with two G.I. overcoats.

Much work has been done in different industries to reduce accidents and standardize identification procedure. For example, in practically every textile plant the water, steam and compressed air piping is identified by color symbols. However, nothing has been done about the classification and the identification of plant hazards which are responsible for accidents. A method of identifying exposed hazards about textile mills would tend to reduce accidents. While some mills have attempted to work along this line, no standardization had been effected. In one plant, they may use red to indicate danger, while in another plant, and many times within the same plant, red might be used to identify firefighting apparatus.

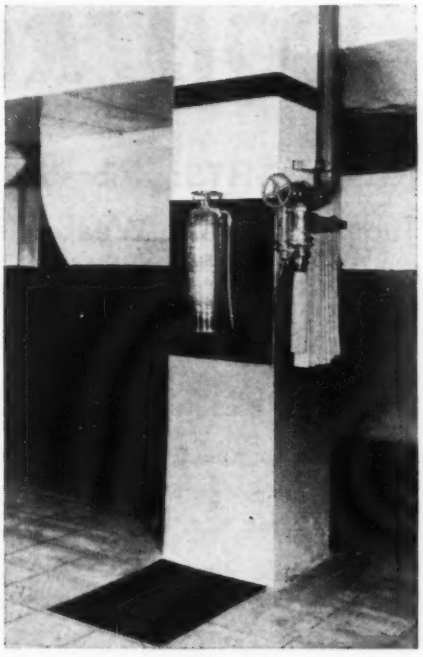
In an attempt to standardize safety identification, Matt Denning, director of Trade & Refinish Sales, Fabrics & Finishes Dept., E. I. du Pont de Ne-

FOR TEXTILE MILLS

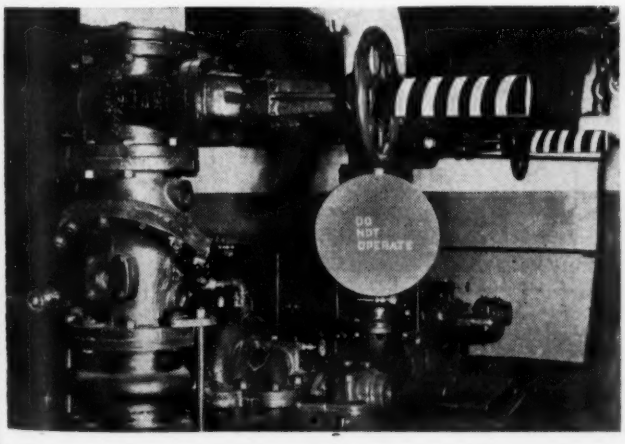
ards—Six Safety Colors Used—System Can be Used for Color Blind Employees.

AND SYMBOLS USED IN SAFETY CODE

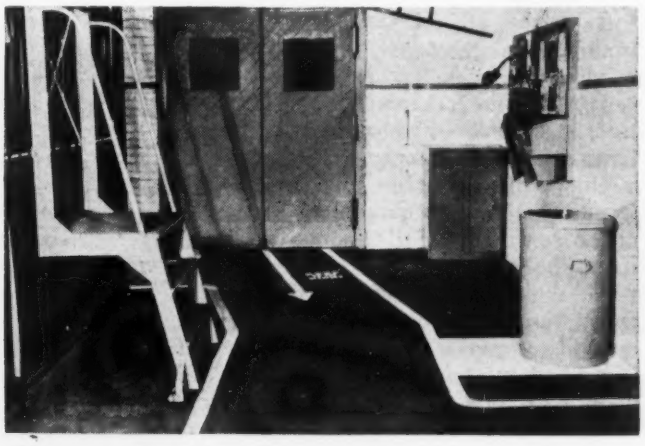
Fire Protection RED	*Precaution* BLUE	*Traffic* WHITE
Fire protection equipment: Extinguishers Hose connections Apparatus Alarm stations Fire hose Hydrants Fire doors Fire blankets	Electrical controls Valves Dryers Scaffolding Vats Boilers Compressors Tanks *Use blue symbol to prevent operation of* Cards Frames Looms Pickers	Traffic controls Storage areas Waste receptacles Aisle markings Corners Floor areas immediately surrounding waste receptacles



Fire-protection red indicates fire equipment. A circumscribed band of red aids identification from all directions.



Below—Precaution blue means "do not operate." The yellow striping indicates a bumping hazard for tall employees.



Lower right—White is used to guide traffic and to indicate waste receptacles.

mours & Co., at the 15th annual convention, Greater New York Safety Council, presented a safety color code for industry which has been endorsed by the National Safety Council. This color code is an advanced step based on "Three-Dimensional Seeing," as reported in the May, 1943 issue of TEXTILE WORLD and was worked out with the assistance of Faber Birren, industrial color consultant.

There are definite hazards in every mill. Also there are safety devices in every plant. Color, in the form of paint, should be used to spotlight and identify these potential trouble-makers as well as to help speedily locate safety and fire protection devices. But, the use of color is not enough. The *right* color should be selected for each job. And, more important, these colors and their uses should become a standard not only in every part of every textile mill, but also in every industrial plant in the country.

As a result, the Du Pont Safety Color Code for industry was evolved. This proposes a *uniform* system of color signals—a system based on sound scientific facts and research. It establishes as suggested standards, certain colors to indicate accident hazards, identify protective equipment and assure orderly arrangement and good housekeeping.

COLORS SELECTED. Six colors have been selected as industrial safety code colors. They are:

YELLOW, ORANGE, GREEN, RED, BLUE, WHITE (and black or gray)

High visibility yellow was selected for it possessed just that quality of

(*Continued on page 146*)

Maintenance of ELECTRONIC CONTROLS

HIGHLIGHTS: Vibration Should Be Avoided—Tubes Generally Weaken Before Failing—Knowledge of Operation Is Fundamental—Dividing Circuits Aids Tracing Trouble.

By W. D. COCKRELL
Engineer, Electronics Section, General Electric Co.

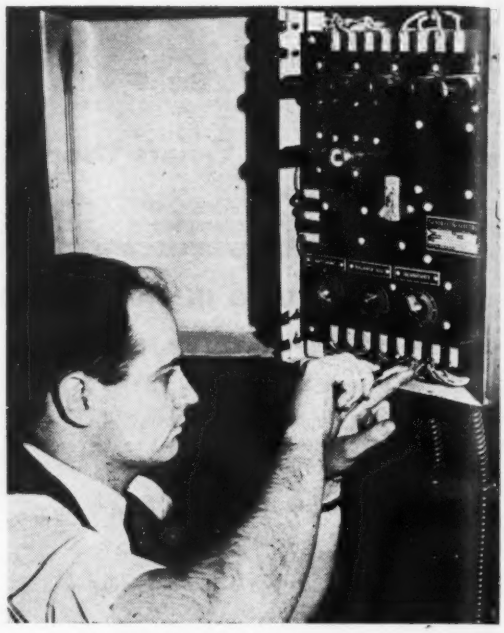


Fig. 1. Electronic control panel subject to slight vibrations (not sufficient to require shock mounting), being given periodic check to assure that screws and bolts are tight.

ELECTRONIC EQUIPMENT, generally, requires less maintenance than other electric equipment since it has no moving or wearing parts. Nevertheless, to keep it in top-notch operating condition and to prevent production interruptions, it is essential that certain maintenance procedures and checks be followed and that troubles be located and remedied as quickly as possible.

Most of the components of electronic controls—resistors, reactors, transformers, and capacitors—are of a semi-permanent nature and are conservatively rated to give many years of service with very little maintenance. Even the electron tubes themselves, while replaceable, require inspection and testing only at comparatively long intervals.

First, it must be remembered that many parts of electronic controls are similar to those used in magnetic controls. Enclosing cases, bases, terminals, wiring, and conduit devices are frequently identical. Standard magnetic control devices—such as fuses, switches, and overload relays of both the instantaneous and the time-delay types—are found on many electronic panels. These devices usually perform starting or protective functions and operate infrequently. As in the case of standard magnetic control panels, this infrequent operation itself sometimes results in special maintenance problems. Detailed instructions as to the inspection and maintenance of these standard devices may be found in maintenance manuals.

PREVENTIVE MAINTENANCE. Particular emphasis should be placed on inspection for cleanliness and the effects of vibration. Because of the high impedances used in some electronic circuits, an excessive accumulation of dust or processed material will, particularly when damp, provide parasite circuits which may interfere with proper operation. Lenses and other parts of optical systems should be wiped off frequently with a clean, soft rag.

Since many electronic panels are interconnected extensively with other apparatus, the loosening of connections or the breakage of leads through the effects of vibration may cause serious shutdowns, entailing intensive (and sometimes aggravating) "trouble shooting" before the fault is located. Vibration also tends to shorten tube life. If severe vibration is found to exist at the installation location, shock mounting of the control panels, as well as the use of stranded or extra flexible leads, may be justified.

Photoelectric and other electronic controls involving mechanical components should be checked frequently to assure that the mechanical adjustments have not been disturbed. Common causes of such disturbances are bolts loosening under vibration or equipment hitting against the control.

Very rarely does a modern electronic tube fail suddenly. Usually the failure is the result of a gradual loss of emission that takes place as the active cathode material is used up or flakes off. Overloading, mechanical abuse, operation at high or low filament or cathode heater voltage, and operation outside of required temperature limits all tend to shorten tube life.

Among the most prevalent causes of poor operation and short tube life are the operation of electronic panels on line voltages differing too greatly from the panel nameplate voltage, and the use of the wrong tap when a tapped-input transformer is provided. Panels are usually designed to operate satisfactorily on line voltages varying plus or minus five per cent of the panel rating. If the voltage at the installation point is consistently high or low, a small auto- or booster-transformer may be used. If the line voltage fluctuates widely, a special voltage-regulating transformer may be required. Faulty heater transformers, loose connections, and corroded socket connections also may limit the low-voltage, high-current power required for the tube cathode heater.

Panels which use gas- or mercury-filled tubes are normally equipped with a cathode protective timer. This timer should be set for the heating period designated by the instructions accompanying each new tube. This time has been found by experience to be the minimum time permissible for reasonable tube life and must not be decreased for any reason.

During the shipment or handling of mercury-vapor-type tubes, the liquid mercury may be splashed on the elements. Therefore, when the tube is first placed in service, it is necessary

to heat the tube cathode for a time with the anode lead disconnected, distilling off the splashed mercury before the anode power is applied. This requires a longer period than the usual cathode heating time; the tube instructions give the proper time. Mercury vapor tubes must be kept upright as much as possible to keep the mercury off the elements.

Shocks and jars in handling tubes, particularly when they are old, can be quite detrimental. Sharp shocks, such as caused by dropping or striking the tube, if they do not actually rupture the envelope, may jar the elements out of position or even break welds or leads.

TROUBLE-SHOOTING. The best trouble-shooting tool is a clear knowledge of the operation of the panel and each part of it. If partial operation is obtained but other actions fail to occur, the trouble may be isolated to a part of the circuit.

Since many circuits on electronic panels have a very high impedance, meters having high impedance are very desirable in servicing the equipment. A useful tool is the radio service multimeter which has a resistance of 1000 ohms per volt or higher. For some circuits, however, an electronic meter, such as a vacuum-tube voltmeter of the d-c reading type or a cathode-ray oscilloscope, is essential. The cathode-ray oscilloscope, particularly when modified to read direct-current potentials, is an extremely useful device since it combines a very high impedance voltmeter with a time axis, thus making visible many voltage changes too rapid for the ordinary meter to follow. Instantaneous thyratron grid and plate potentials and other voltage waveforms may be observed easily on the oscilloscope and any incorrect operation quickly detected.

In trouble-shooting on electronic control, one should first make sure that the trouble lies in the electronic equipment. Is power available at the control panel terminals? Can the motor or other device be operated by alternate means (such as from a d-c bus by drum switch or magnetic control) if provided? Are all protective devices and interlocks outside of the panel operating properly? Has the cathode protective timer relay completed its timing cycle and applied anode power? Have mechanical adjustments been disturbed where items such as scanning heads or other mechanical components are used?

The times at which the failure occurs may be divided roughly into three: (1) when first starting a new equipment; (2) when starting after a normal shutdown; and (3) during operation.

EQUIPMENT FAILURES. When new electronic equipment fails to start, the cause may be a lack of correct power, incorrect or missing connections, tubes in wrong sockets, use of wrong or defective tubes, no fuses or wrong size fuses or damage done to panel leads or parts in shipment.

Incoming power should be checked against panel nameplate. The remedy for no power, missing wires, and fuses is obvious. The position and type of tubes can be checked by referring to the wiring diagram and the panel stamping. Defective tubes and (sometimes) tubes in the wrong socket may not heat up. The glow of the hot cathode may usually be seen in glass tubes; in metal tubes the envelope becomes hot to the touch. (The envelope of metal thyratrons and ignitrons is at cathode potential. Do not touch while power is on the panel.)

When electronic equipment does not operate after a normal shutdown, first check power, interlocks, and safety switches. The cathode heating timer relay may have failed or the anode contactor may be defective. An old tube often fails due to expansion and contraction as power is switched off and on. Filament or heater burnouts may be detected quickly by inspecting glass tubes or by feeling metal tubes for heating. (Power should be removed before touching metal thyratrons and ignitrons.) Sometimes an overloaded transformer or reactor will fail due to the expansion cycle as power is removed and applied. Here, however, warning of failure is usually given by excessive heating, the odor of the hot material, melting of the sealing compound, or smoking or charring of the insulating paper.

If after a period of satisfactory operation, the equipment's operation quickly becomes unsatisfactory or ceases altogether it is often possible to isolate the trouble to a specific cause by noting the exact symptoms of the failure. Power failure or a blown fuse result in an instantaneous change in the equipment's operation. An overloaded transformer, resistor, or wire is usually indicated by heat and smoke before total failure occurs. The cause of overload—whether short-circuit, load coil burnout, or motor-bearing failure—must be found and corrected before the equipment is again placed in service.

A failure in a tube cathode circuit permits the cathode to cool gradually over a period of seconds or even minutes. Therefore, the loss of operation may be gradual rather than sudden as in the case of power failure. However, small rectifier- and battery-operated tubes cool quickly.

If none of the above causes for failure are evident it will be necessary to go carefully through the operation of the circuit and to analyze each step. An instruction book for the particular panel or at least an elementary diagram of the circuit should be available. If the circuit is at all extensive, it is usually possible to divide it into two parts; for example, the control and power circuits of a welding control. Then it may be possibe to use a meter, electronic voltmeter, cathode ray oscilloscope, or some other means to determine whether or not the control section is operating correctly as the input is varied over the normal range. Likewise, a simulated control signal may be applied to the power circuit to test that half.

In a similar manner, each part of the circuit can be further subdivided until the faulty circuit or part is found. With a clear knowledge of each part of the circuit, this procedure can be carried out quite rapidly. It is a good idea to check the operation of panels while they are operating correctly and to record voltages found and cathode ray traces seen between specific points. In this way, the differences found in a defective panel will be immediately evident, ad the trouble-shooting will take much less time.

Fig. 2. Arrow points to guard protecting photoelectric scanning head.

COLOR APTITUDE TEST Developed for Textiles

HIGHLIGHTS: Color Council Cooperates with Industry in Development — Designed to Fit Employees to Jobs Involving Color — Testing Conditions Controlled.

By FORREST LEE DIMMICK

FOR THE PAST FOUR YEARS, the Inter-Society Color Council, of which the American Association of Textile Chemists and Colorists is a member body, has been at work upon a test designed to evaluate a person's general ability in dealing with colors. The problem is one of long standing, and this is by no means the first attempt at its solution, but in no other case have there been so many different sources of professional information and technical skill cooperating toward a single end. The question was formulated and presented to the council by a member of the textile industry. He requested assistance in determining the suitability of those employees whose job it was to dye textile yarns or fabrics to match given samples. He pointed out that at present there is no technique for determining an employee's probable success in such a job and thus preventing inept ones from failing at the final stage, when they might have been invaluable in other parts of the plant. To answer this need, a committee of the I.S.C.C. has devised a color-matching test which brings out the degree of precision a person uses in discriminating colors and the speed with which he is able to carry on such discrimination.

APPLICATIONS. The following results and discussions point to several ways in which the test was designed to be useful in the textile industry. The first and most obvious of uses is in testing all new employees who are at all likely to work in places in the plant where accurate color judgments are necessary. Old employees, both color workers and non-color workers should be tested with a view to shifting all individuals to jobs for which they are most suited. It can be expected that such a procedure will contribute toward a decrease in labor turnover. Finally, all persons in any way concerned with color should be retested at regular intervals to uncover changes in "color aptitude" — improvements due to training or to motivation; diminutions due again to changes in motivation or to factors of age, health, and the like.

TEST PROCEDURE. Briefly, a person is given a number of colored samples, consisting of chips 1⅛ in. by 1 in. and required to find the best matches to them among 50 chips arranged haphazardly in a field and fastened permanently to a gray background. For most people, all but a few of the field chips can be rejected as not "matches" in any single case. The real test comes in discriminating the one among those few—at most probably five or seven—that is the best match to the sample in hand. A score, obviously, is very largely determined by the accuracy with which the matches are made, but a time limit of 30 min. is set so that over-deliberation reduces the final score as well as does inaccuracy. Thus high ratings indicate both accurate and rapid discrimination. From this it can be seen that the committee put practical considerations first and aimed at a quantitative evaluation of precisely the aptitude that is involved in the efficient performance of a color matcher on the job.

That is not to say that dye-plant workers have only to make color discriminations. Their jobs require other skills than those involved in this test. Neither are the test matches made under the same conditions that prevail on the job. Conditions for test matching must be controlled, and cues and devices eliminated from the test procedure that do not reflect the particular factor — color-matching aptitude — which the test attempts to quantify. Such conditions determine the placement of the colors in the matching field and the order of presentation of the samples to be matched. It is important, for example, that the person taking the test be unable to compare a sample with more than one possible match at a time and that the sample and a match always occupy the same relative positions. Thus devices which individual matchers may have developed in practice are eliminated, sometimes to the annoyance of the person being tested. However, only by such means can scores be made comparable. The result may be that a new recruit will score as high as, or higher than, an experienced matcher. Obviously this does not dictate replacing the latter with the former, but training the new man could be undertaken with a high degree of assurance of his ultimate success.

Since the field of application of the test lies among individuals who must work accurately with colors, we must assume a range of aptitude for such work that is definitely above average. We have, therefore, provided for a wide range of scores between the average and the highest without making the test so intrinsically difficult as to discourage the person taking it. Such an end is accomplished partly through including the time factor by using only such matches as can be made in the first 30 min., but mainly by the carefully graded saturation series of the color chips. The successful preparation of such series is an accomplishment of major proportions. Credit for it goes to Mr. Carl E. Foss, co-chairman of the I.S.C.C. committee.

TEST MATERIALS. For the original form of the test, Mr. Foss made two series of colored chips, running from neutral gray to a yellowish-red of Munsell 5R (d.w.l. = 626 mμ) and from the same neutral gray to a bluish-red

THE AUTHOR

. . . of this article is professor of psychology at Hobart College, Geneva, N. Y., and is a past chairman of the Inter-Society Color Council. Professor Dimmick has an extensive color laboratory and has been a consultant on color problems for 15 years. To obtain test sets described, write Professor Dimmick or the Munsell Co., Baltimore, Md.

In testing, to obtain a new color the one just used must be returned to the holder as shown. The girl using the set is returning a chip with her right and is obtaining a new one with her left.

of Munsell 5RP (d.w.l. = 512c mμ). The colors were chosen because they lie in the neutral regions for the two types of color deficiency. While there was no intention in this work to produce a test for "color-blindness," there was every reason to prevent persons with color deficiencies making scores as good as those of normal subjects. The choice of colors offers a considerable handicap to "color-blind" subjects. The color (Munsell hue) and lightness (Munsell value) of the chips are held constant so that members of the series differ from one another only in saturation (Munsell chroma). The graduations within the series are close to, or less than, a just noticeable difference. The best observer under favorable conditions will not make all the matches correctly. There always remains a chance for improvement.

It is well known that the perceived color of samples such as those in the test is a resultant of their selective reflectance and the illuminant. The test materials have been standardized and measured under I.C.I. Illuminant "C," the equivalent of north-daylight (7500° K). It is essential that the test be given under such illumination for the interpretation of test scores in terms of the standard scores, to be valid.

STANDARDIZATION. The final form of test procedure is the culmination of extensive exploratory work. A wide range of individuals from color experts to office workers were tested by various delegates of the I.S.C.C., the total running into thousands. General Dyestuffs Corp. contributed scores from 133 test subjects, including most of their color experts. As results came in, they were examined statistically with the practical aims of the test in mind, the procedure shifted where it showed the need, and more tests made. The last 300 test scores that were obtained are being used as a tentative standardization by reference to which the score of any individual indicates where he stands in "color aptitude" relative to the standardizing population. As data accumulate, the ratings will approximate more closely their positions in a more general population. Studies have been made which indicate the reliability of a particular score, so that one can decide whether one individual's rating is significantly above or below that of another. There are indications, also, of how a man's score will change upon retesting, both as a matter of simply learning how to perform such a test, and of increasing one's general experience with color matching in the meantime.

"COLOR APTITUDE". At this point it should be made clear what is implied in the concept of "color aptitude" as it is conceived in this work. In the first place, the test does not measure some hypothetical retinal function. It attempts, rather, to evaluate the efficient use of color perception. It is quite possible that two individuals having identical 'retinal sensitivities' —if it were possible to make such a determination—would show very different degrees of color aptitude. It follows, then, that "color aptitude" scores obtained by retesting over a period of time will show significant changes which are the effect of practice and of motivation. This characteristic adds to the fundamental utility of the test.

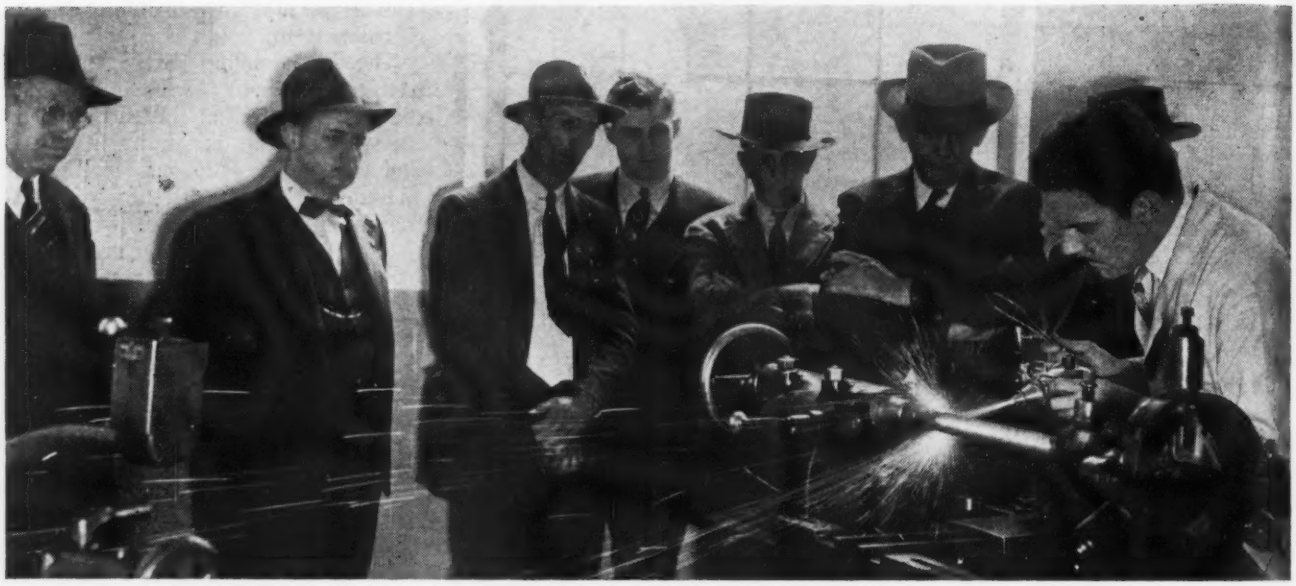
Small variations or differences in scores are intrinsic to the test; but, due to the fact that a 100% scale is used for scoring, it is much too finely graded. Such variations, however, fall within a limited range. On the other hand, progressive increase in score may be taken as indicative of improvement in color aptitude.

The Philadelphia Textile Institute has undertaken to test its students at the beginning and at the end of their course, with the possibility in mind that changes in scores may give them an index of the effectiveness of their training in the use of colors. Unfortunately, this program is considerably hampered by loss of students to the armed forces. The measurement of such improvement in color aptitude is, naturally, subject to the law of diminishing returns. The higher the score is at any time, the less increase in score will result from any particular course of training. Repeated retestings of the same persons indicate that no one can hope to raise and maintain his score beyond the low 90's. The highest score obtained in this series of trials was 97.5% correct, and on the following trial the subject scored only 88.

TEST FORM 2. On the basis of four years of preliminary work by the committee, Form 2 of the color aptitude test has been perfected. Changes have been made which improve the convenience and utility of the new form but which follow the basic procedures described. The most striking change is in the number of colors and in their absolute saturation. One of the reds of the original test has been replaced by a green that serves the same function for color deficient subjects. There have been added a yellow, a purple with a large blue component, and a gray. Thus there are now five color series of ten chips each so that the total number of matches is increased to 50. The new series now run from Munsell chroma 4 to chroma 5 which makes the test more definitely colorful. The 50 loose chip samples have been enclosed in a flat holder in which they are invisible to the subject until he is ready to use them and then he can obtain only one at a time in the specified order prescribed for the test. The complete set is contained in a three-section folder about 12 in. by 18 in. and ¾ in. thick when closed.

METALLIZING on Increase, S.T.A. Engineers Told

HIGHLIGHTS: Use of Machinable Hard Metals Has Enlarged Scope of Process —Low-Voltage Damage to Fluorescent Lamps—Handling of Voltmeters.



Metallizing Demonstration on Loom Crankshaft by E. M. Kay at North Carolina Vocational Textile School During Meeting of Master Mechanics of S.T.A. Left to Right: C. L. Pickler, Albemarle, N. C.; Lewis Burgess, Charlotte, N. C.; H. Shealy, Balfour, N. C.; J. E. Wolfe, Balfour, N. C.; J. D. Taylor, Balfour, N. C.; and S. K. Lineberger, Rock Hill, S. C.

THE USE OF METALLIZING EQUIPMENT in the Carolinas has increased twenty times in eighteen months, E. M. Kay, manager of the Carolinas branch of the Metallizing Company of America, Charlotte, told the master mechanics division of the Southern Textile Association at Charlotte, April 6. Metallizing equipment and techniques, he said, have improved over the past 25 years to where any metal that will melt at 6000° F. can be sprayed onto another metal, wood, plastic, cloth, etc. Originally only lead, tin, and a babbitt metal could be sprayed with any success. In the past four or five years spraying of machinable hard metals has been worked out, thus enlarging the scope of metallizing. Formerly hard metals had to be ground to a finish. Most mills have the compressed air and the gases, such as oxygen and acetylene or the equivalent, that can be used with the metallizing equipment.

One advantage of metallizing in textile plants is that a harder, longer-wearing metal can be put on over the original metal, thus increasing in many instances the useful life of the part and reducing down-time for repairs. Another advantage is that parts can be repaired without disassembling. Motor shafts, for example, can be built up without removing the motor from the shaft, thus cutting down on the work of repair.

"Other applications we plan to make has been very successful with reclaiming loom crankshafts and pulleys," said A. L. Eledge, Spartan Mills, Spartanburg, S. C. "We don't know how long our metallizing repair jobs will last, as we have never had one break on us, and only time will tell us the story. At present we are buying no new crankshafts!

"When we repair our crankshafts, we also reclaim pulleys that are worn in the bore, by reboring and building up the shaft to fit the rebored pulley and pressing it on the shaft with heavier pressure than normally. We have found it necessary to increase the power on the press for this reason.

"Other applications we plan to make are on the feed-roll shafts on our cards, which are soon to be overhauled, and numerous journals common to most textile mills. We wouldn't be without our metallizing outfit."

Properties of metal are changed on the spraying from those of the original metal to some extent and some new qualities are obtained. "Any metal," according to Mr. Kay, "passing through a hot flame takes in carbon or something of the sort or loses oxygen." In other words, sprayed metal is considered by some engineers to be the finest bearing metal that can be used today. This is because the sprayed metal is porous and accepts a lubricant readily, although to the naked eye the metal does not appear porous. It has been found that spraying the inside of airplane cylinders makes the engines run cooler.

Marshall Dilling, executive secretary of the STA, told members that, for several months before his retirement from the mill, he had tried metallizing on various applications and had found it very satisfactory. He expressed the

opinion that metallizing offers great possibilities to master mechanics, especially in the postwar, when sufficient competent help can be trained and the experience spread over the shop personnel, as has been done in the case of welding.

CASE HARDENING. Mr. Dilling asked about the practicability of case-hardening sprayed metals, as the practice would have a wide application to the flutes and collars on metallic rolls. In answer, Mr. Kay said that metallizing companies had given up the idea of case-hardening sprayed metal because of the difference in expansion and contraction of two different metals, which weakens the bond. Instead, he suggested that a very hard metal such as 120-carbon steel or a Tufton steel be used to give the desired hardness.

Training metallizing operators, according to Mr. Kay, is not difficult, as almost any intelligent person who can recognize a neutral flame—mandatory for correct metallizing—can soon learn the work. Some members present felt that a good mechanic should be trained to do the metallizing. Mr. Kay cited an instance where a plant in Chicago was using women to do this work satisfactorily. In cases in which he had investigated the failure to use metallizing where the equipment was on hand, he had found the instruction of operators had been at fault, not the equipment, he said. When the operatives were instructed properly, good results were obtained.

"Case hardening of metals for fast-wearing textile-machine parts holds much possibility for the master mechanic," said W. N. Kincaid, Wiscassett Mills, Albermarle, N. C. "We have secured a Johnson oven and a number of books on heat treatment of metals from McGraw-Hill for our shops and have had considerable success in case-hardening studs and journals, which are among the major replacement items in textile plants. By selecting the proper metal for replacement parts and hardening them in the Johnson oven, we get considerably longer life from the parts we make. In addition, we use the Johnson oven for case-hardening purchased parts, which increases the life of such parts.

"In our work in the field of case-hardening we have only scratched the surface of possible applications in textile plants that are well worth attention. While we do no metallizing of worn parts, undoubtedly there are many places it can be used in reclaiming machine parts."

LOW VOLTAGE. Low voltage due to a drop in the line or to overloading

A loom crankshaft being reclaimed by metallizing.

of lines because of additional loads at the mills causes much trouble in electrical systems of textile plants, and the number of mills running low voltage is amazing, according to James T. Meador, of Southern Electric Service Co., Charlotte, N. C. Boosters installed on these lines can eliminate the troubles.

Fluorescent lighting, especially, is affected by low voltage, as the lamps are slow to start and flash on and off several times at first. This flashing causes more rapid deterioration of the coating used on the insides of a light tube, thus reducing its life. Higher voltages up to 125 give quick starts, good lighting, and longer life than do lower voltages of around 90. "I find that voltage regulators are essential on lighting circuits, as they hold the load right there," said Mr. Meador.

One master mechanic commented that he was putting in fluorescent lighting as fast as he could get the equipment but had to use anything he could get. He had experienced trouble with bulbs burning out rapidly and wanted to know if one make of equipment was better than another. Mr. Meador advised him to call in the representatives of the companies from which he bought the equipment to help locate the trouble. As to one fixture being better than another, he didn't think there much to consider, as most of the basic parts were secured from a few large firms and assembled.

Lightning is one of the bugaboos that will be with the textile plant in the coming seasons; and in some cases, where power companies don't believe in using protective devices on the primary side of transformers, trouble may be expected.

Boys from various departments of the mills are being trained in electrical work at the North Carolina Vocational Textile School, according to Mr. Meador, who is connected with the electrical department of that institution. These boys know practically nothing about electricity when they come in, and after a 12-week course they know how to take the National Electrical Code Book and figure everything out of it.

TROUBLE SHOOTING. In looking for overloads on electric motors, Mr. Meador recommended any one of several types of tong ammeters. When the rated amperes per terminal, as stamped on motor plates, is exceeded, as detected by the ammeter, something must be done to relieve the overload at once, or overheating and damage will result. The dual-scale ammeter with ammeter and voltmeter dials is very useful where line fluctuations are present. An ammeter is good only as long as its scale is kept adjusted. Dial readings can be ordered to suit the plant.

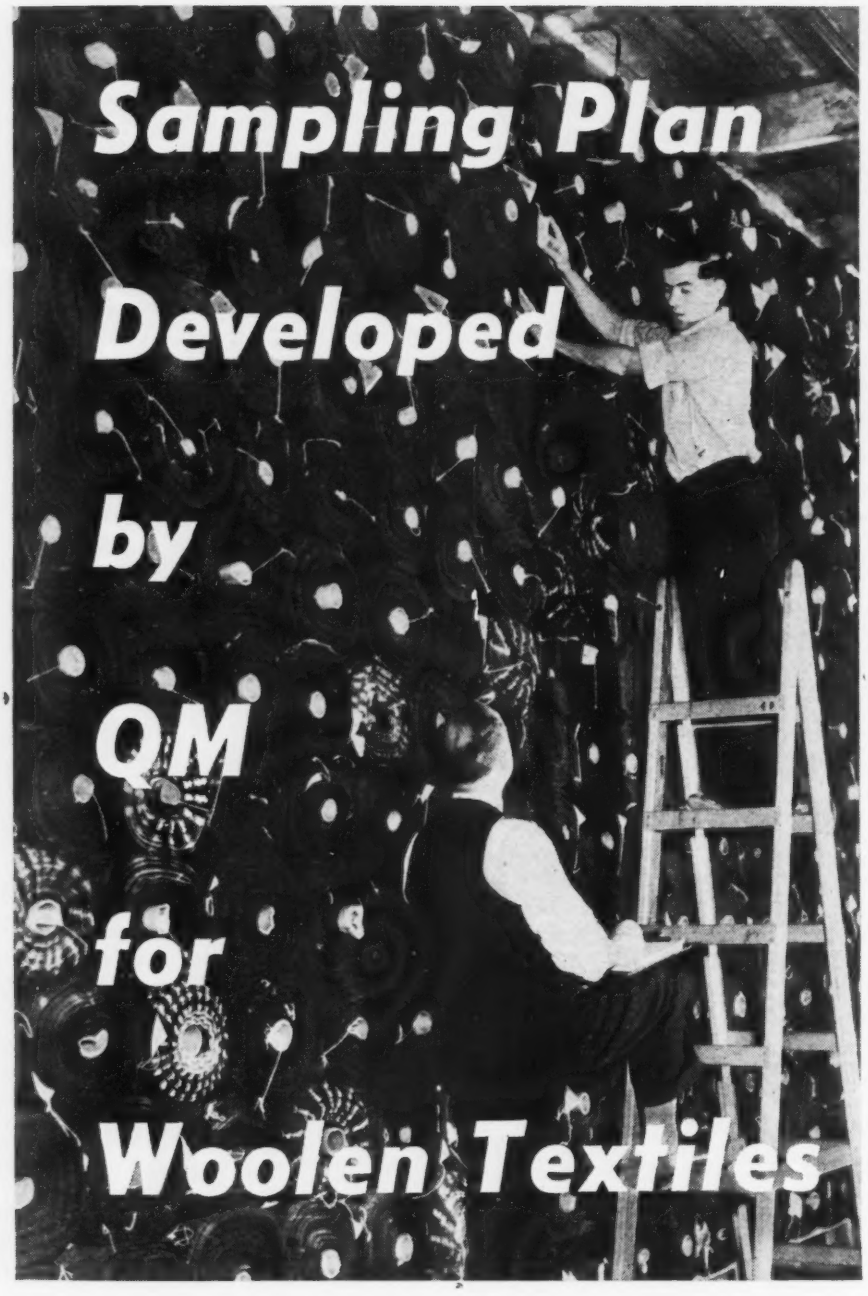
On small motors, such as the 1 or ¾ hp. used for looms, it is necessary to use a multiplying coil to secure accurate readings with an ammeter. The actual reading is taken in a coil of say 10 turns and the dial reading divided by 10. Another way is to take the motor terminal wire, throw two or more loops in it, read the loop amperage, and divide by the number of loops used.

To locate grounds, Mr. Meador passed around a small compact voltmeter that he said was inexpensive and effective. One of the most useful instruments shown was a small a.c.-d.c. meter that detected voltage by sound as well as by indicator. This little instrument seemed to be used fairly widely, and one master mechanic told how his electrician had put a pocket clip on his voltmeter and carried it around so both hands were free to hold the terminal electrodes.

BOILER FEED WATER. Chairman R. F. Nichols, Newberry, S. C., in answer to a question from Mr. Eledge, on boiler feed water, emphasized the fact that raw water for the boiler should be tested from every angle. By sending samples to the North Carolina State or Clemson Colleges, accurate analyses can be secured, and only then should the decision be made as to treatment of the water.

Humidification by steam-air equipment has possibilities, according to Mr. Nichols. Favorable factors, he said, are the small amount of equipment necessary and the evenness of temperature and humidity control. In a hosiery mill he had visited he had noted the results with this steam-air system and added that his organization is going to adopt it.

Sampling Plan Developed by QM for Woolen Textiles



Under a new inspection system being used at Philadelphia QM Depot, screening inspection is no longer in use, having been replaced by a system shown in Table I. *Courtesy of Philadelphia Inquirer*

It is the policy of the inspection organization at the Philadelphia Depot, according to Lieut. Colonel A. E. Dennis, Officer in Charge of Inspection at the Philadelphia Quartermaster Depot, to apply statistical methods to the analysis of data obtained from inspection to the maximum degree. Lieut. Jack G. Maack has been charged with studying and originating sound statistical applications to the inspection procedure. His knowledge and his practical approach give particular significance to the following summary of the explanation which he delivered recently to Sub-Committee B-5 of Committee D-13 on Textile Materials of the American Society for Testing Materials.

HIGHLIGHTS: Inspection System Applied to Worsteds, Shirtings, Suitings, Overcoatings, Knit Goods, Linings, and Pile Fabrics—Acceptance Limit Will Run About 10% Defective.

APPLICATION OF STATISTICAL QUALITY CONTROL to textiles procured by the Philadelphia Quartermaster Depot is a new conception of acceptance inspection which was instituted in August of last year. This application to wool cloth should be of interest to all those concerned with the manufacture of textiles for the Government.

While conducting the study which led to the use of statistical methods, it was found that inspection standards first had to be set up. This was done by collecting and displaying properly the various types of defects. Inspectors had access to these standards, were trained in their use, and had their work re-examined to be sure that they were evaluating the defects correctly. Tests finally revealed that, in the main, inspection was uniform.

The next step was to design scientific sampling which would give maximum information using a sample of minimum size. The first phase was to determine the nature of the distribution of the defects. Examination of many pieces by the depot showed no normal tendency for defects to occur more frequently in one section of the cloth. Analyses of various shipments demonstrated that homogeneity could be expected.

FACTORS IN INSPECTION. The inspection plan was designed to test for those attributes which would be revealed by visual inspection. They included (a) shade, from side to side, or from end to end; (b) shivy material; (c) slubby material; (d) holes; (e) coarse yarn. (This inspection also included width and length measurements.) Factors which were tested in the laboratory were not included in the plan. These included strength, shade, color fastness, wool content, texture, porosity, weight, extractables, shrinkage, and perspiration tests. Certain basic principles were, of necessity, arbitrarily established in light of knowledge of the industry and of past inspection experience.

Another question which arose in the formulation of the plan was that of producer and consumer risk. If material is well within the percent defective allowable, there is little danger of its being rejected; but if the material approaches the percent defective allowable, sampling fluctuations cause rejection of material which is substantially no worse than material which is accepted. Any sampling procedure which uses a fraction of a lot submitted is subject to this inconsistency.

Experiences in the cut, make, and trim industry established how many defects result in a "defective" or piece of cloth that should be rejected. This

had been determined as a piece of cloth which contained more than one defect for each 5 yds. Since the depot made deductions on the basis of ⅛ yd. for each defect, a defective piece, therefore, became any piece of material which was more than 2½% defective.

Following the definition of a defective, studies were made to determine, in the light of what industry had been producing, what was a reasonable expectancy of a quality level. The lower the fraction defective of material submitted to the depot, the smaller the sample possible, since acceptable quality, if the sampling plan were based on the imminence of failure, would be more sensitively reflected. The better the control demonstrated during the production of material, the smaller the sample could be and still reveal the quality of the lot. However, a cardinal principle of sampling is that the sample should not be so small that one defective is cause for rejection of the lot. If one is willing to accept 1% defective as an economical compromise with perfection, he must draw a sample sufficiently large that one defective will not cause a rejection. In other words, the sample size must exceed 100. These considerations placed certain negative restrictions on the minimum sample to be drawn.

The depot could not be certain of the order in which goods were produced in the mill; consequently sample sizes had to be adequate to acknowledge possible stratification.

The size of the shipment influenced the size of the sample drawn. A relatively small sample percentage-wise of a large shipment would reveal a great deal more than a large sample percentage-wise from a small shipment. The sampling plan, therefore, was designed to accommodate shipments of various sizes. Then, too, material which cost $3.00 a yd. justified more inspection than material which cost 75¢ a yd. There is a break-even point in the economic consideration beyond which it is not wise to go. Consideration given as to the purpose for which the material was to be used (lining, outerfabric, work garment, or a dress garment) influenced the amount of sampling which was to be done.

METHOD OF SAMPLING. The sampling plan for woolen fabrics is a compromise between an average outgoing quality level and a lot-by-lot acceptance plan. It is a double sampling plan, which, when first samples reveal a fraction defective greater than that which is allowable, calls for a second sample, as indicated in Table I. The sampling plan is designed at about a 10% consumer risk. This means that the depot runs the risk of one time in ten accepting a shipment which exceeds 10% defective (on the basis of ⅛ yd. for each defect) based on the samples from individual lots.

The sampling plan calls for basing acceptance or rejection of a shipment on the results of the sampling. In the past, it was the practice, when a sample revealed a percent defective which exceeded the acceptable quality level, to examine that shipment 100%. The present philosophy discourages screening inspection by the Government.

For practical reasons, fabrics have been classified (See Table II) into groups according to the principles earlier outlined; i.e., the purpose for which the fabric is to be used, the cost of the fabric, and the urgency of the need. For each of these groups of fabrics, according to the kind of sampling desired, a sampling table has been designed, as covered in Table I.

TABLE I—SAMPLING PLAN SHOWING THE NUMBER OF ROLLS INSPECTED UNDER EACH PLAN ACCORDING TO SHIPMENT

Rolls in Shipment	20 or under	21–40	41–70	71–100	101–150	151–225	226–300	301–500
Inspect for Plan 1.....	10	15	25	35	45	55	70	100
Inspect for Plan 2.....	7	10	15	20	25	35	40	50
2nd Sample....	3	4	5	10	20	20	25	50
Total to Inspection..	10	14	20	30	45	55	65	100
Inspect for Plan 3.....	6	8	12	15	15	20	25	30
2nd Sample....	4	5	5	5	10	15	20	30
Total to Inspection..	10	13	17	20	25	35	45	60

NOTE: All rolls over 500 in one shipment are to be treated as a separate shipment and results averaged.

TABLE II—BREAKDOWN OF WOOLEN FABRICS ACCORDING TO INSPECTION PLAN SHOWN IN TABLE I

PLAN 1
Barathea 14 oz., type B
Covert
Doeskin
Elastique
Gabardine 18 oz.
Jersey
Tropical worsted
Worsted shirting
PLAN 2
Facing cloth
Flannel shirting
Napped serge 21½ oz.
Overcoating melton 32 oz.
Serge
Suiting
Cloth knit
Cloth tubular
PLAN 3
Alpaca
Felt
Lining wool 12 oz.
Lining wool, knit
Lining wool, woven
Undercollar cloth
Wool bunting

Machines and Methods for P

HIGHLIGHTS: Three Major Types of Roller Machines Are Suitable for Coating Textiles—Give High Speeds and Large Production — Require Careful Adjustment.

By JOHN B. CLEAVELAND

In an article in the March issue of TEXTILE WORLD, Mr. Cleaveland outlined the six methods employed in coating textiles with plastics and discussed in detail the use of knife coating machines. In this article he discusses roll coaters, and in subsequent articles will consider extrusion machines, brush coaters, dip coaters, and spray guns.

COATING MACHINES in which the solution is applied by roll are most useful for very rapid, quantity coating. As a class they are much more expensive than knife machines, principally because they must be made to closer manufacturing standards. They are more complex to adjust, but once set there is less likelihood of coating variations and errors due to human frailty. Naturally with the greater number of moving parts, the maintenance costs of roller machines are higher than those of knife machines when doing comparable work.

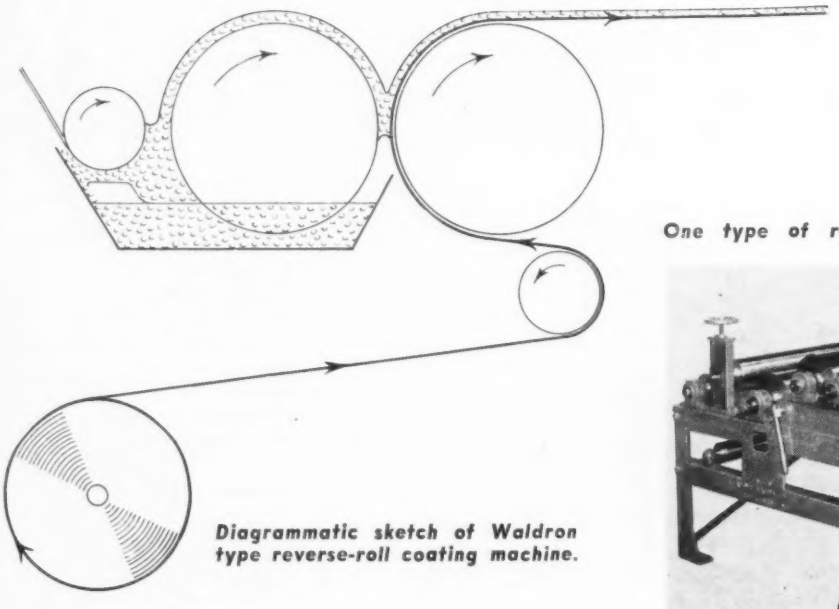
TRANSFER ROLL COATERS. About the simplest form of roller coaters is the transfer type as exemplified in the printing press, particularly of the offset variety or the varnish paper coaters. The coating material is transferred from one roll to another over at least three rolls and usually more. This distributes the solution into an even film which is finally transferred to the cloth or paper to be coated.

Except for the printing press, the greatest use of this coater is not in the cloth or paper field at all, but rather for coating sheets of metal or other rigid panels, such as pressed-fiber signs or venetian-blind slats. There is little to recommend it in the textile field. The coating solution must have excellent leveling and flow characteristics to overcome suction ripples that form as the wet film is pulled from the roll.

CALENDER COATER. Another closely allied type is the much-used, rubber calender coater, composed of three or more rolls. The coating mixture—composed of suitably compounded thermoplastic resins, plasticizers, and modifiers, with a minimum or total absence of solvent—is applied between the two top rolls. This is then squeezed through the rolls into a film of proper thickness, and transferred to the fabric passing between the lower rolls.

The cost of this machine is high, but since little or no solvent is used to liquify the plastic, the application cost is lower than with most other coaters. It is essentially a single-pass machine, operating at slow speeds, and requiring a great deal of power. Its greatest economy of operation is in evidence only when a heavy coat is applied to a fabric or paper. Its film closely resembles a lamination, and when applied directly to fabric or paper, frequently has a low degree of adhesion.

4

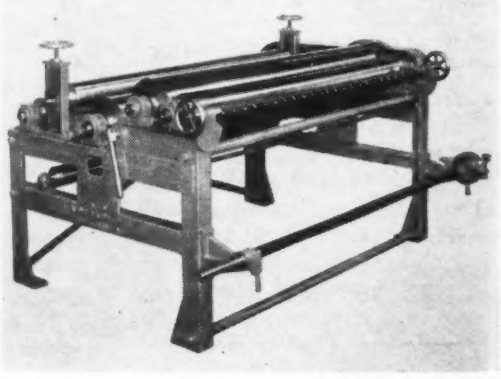


Diagrammatic sketch of Waldron type reverse-roll coating machine.

A

B

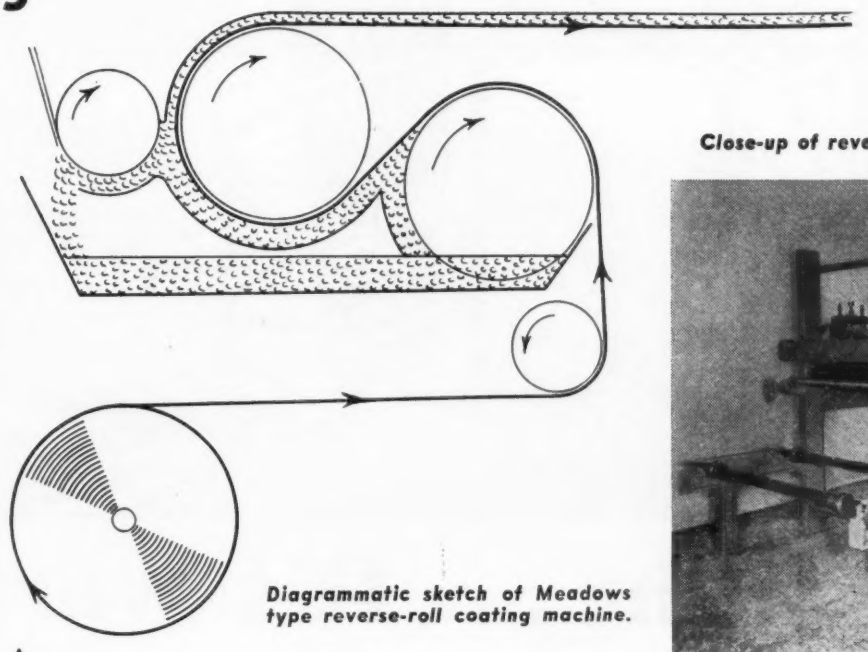
One type of reverse-roll coating machine.



John Waldron Corp.

PLASTIC COATINGS

5

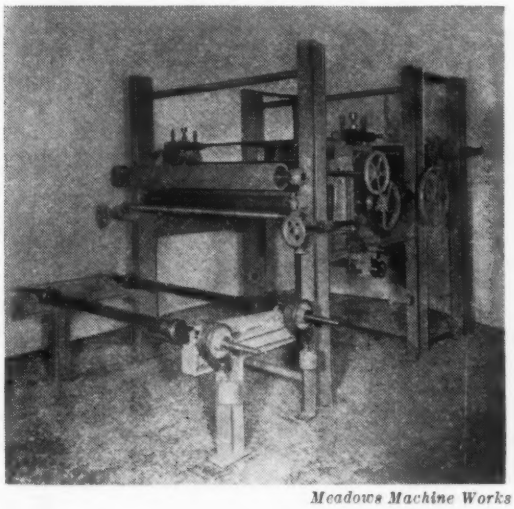


A

Diagrammatic sketch of Meadows type reverse-roll coating machine.

B

Close-up of reverse-roll coating machine.



Meadows Machine Works

It is usual practice to apply a light prime coat with a knife spreader before calender coating. The result is a non-porous, waterproof, and flexible coating.

Vinyl resins—such as the polyvinyl chloride, polyvinyl acetals, and the copolymers of vinyl chloride and acetate—are particularly satisfactory for use as calender coating masses, as are many of the synthetic rubbers, natural rubber, ethyl cellulose, cellulose acetate, and similar high-heat-resisting thermoplastics. Pyroxylin, chlorinated rubber, and similar plastics are unsuited to this method of application. There can be no doubt that despite the high machine cost and evident coating faults, calender coating will continue and grow in the field of plastic-coated textiles.

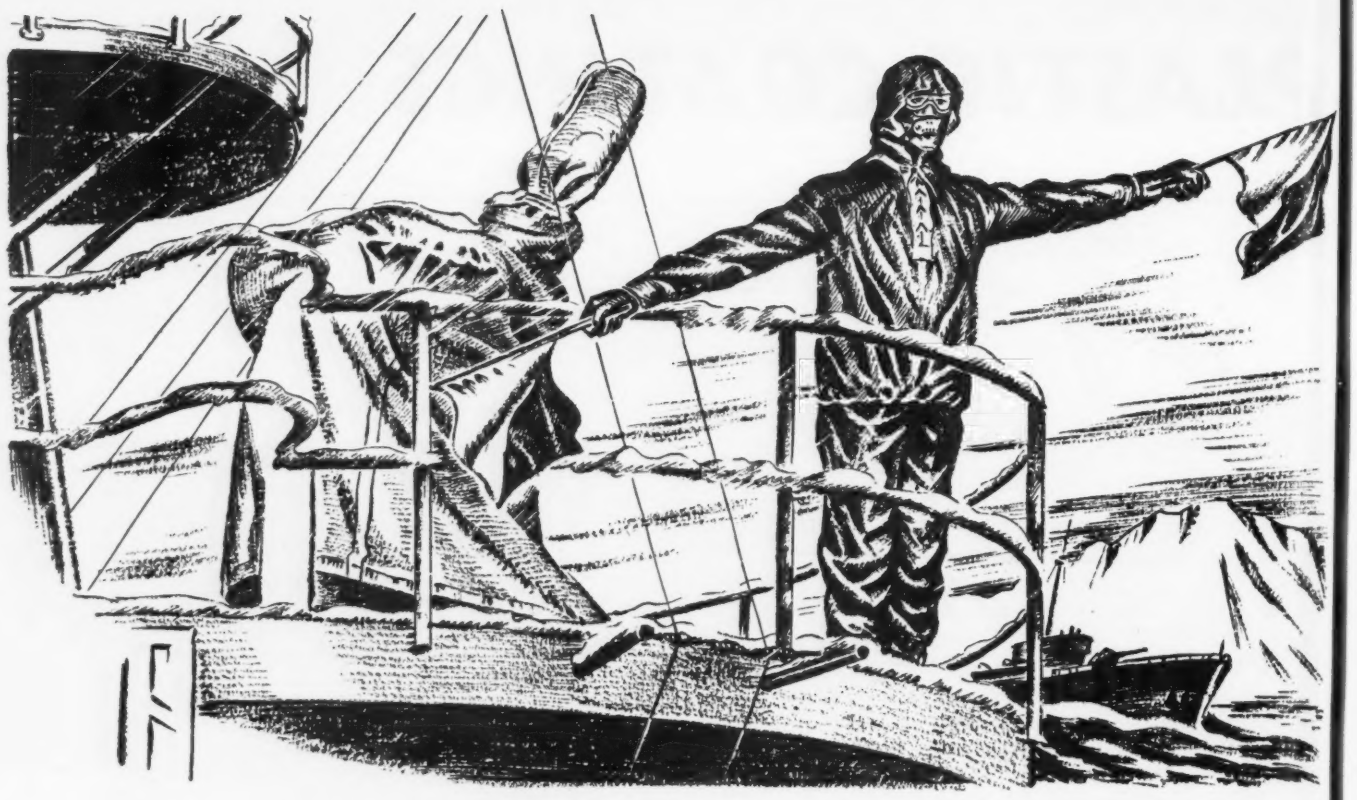
REVERSE-ROLL COATERS. There are two general designs of reverse-roll coaters. A type that meters the solution to a large roll and then applies the metered wet film to the fabric or paper is shown diagrammatically in Fig. 4a. The machine shown diagrammatically in Fig. 5a applies an excess of coating to the fabric or paper and passes the material through two rolls that meter and remove the excess beyond the desired amount.

There is little to choose between these two coaters. It is possible to use a slightly higher viscosity dope on the first, with a consequent saving of solvent. The second type, using a lower viscosity material, flows the coating more and results in a slightly more uniform and better-covering film. As the wash-up time of both is necessarily high, they are better suited to long runs of a single coating solution than to short runs requiring a variety of dopes and many wash-ups. They both tend to coat the high and low spots of a fabric with an equal amount of plastic, making it difficult to build a smooth coat on a rough surface. However, they are notably efficient when coating a smooth surface, such as paper or filled, highly calendered cloth. The character of the surface to be coated does not determine the thickness of the coat applied as is the case with the knife spreading machines.

Figs. 4b and 5b show commercial reverse-roll coaters. The latter machine, which was shown also in diagram 5a, depends to some extent upon the uniformity of thickness of the material being coated to produce a uniform coating. Thus, if the fabric or paper varies in thickness over 0.001 in., it is not practical to deposit films lighter than about 0.003 in. wet thickness. This is rarely of great concern, however, since coating solutions for roller machines are compounded with a comparatively low solid content and wet coating thicknesses of 0.003 or 0.004 in. give extremely light dry films.

Roller coating is a high-speed operation, limited only by the efficiency of the drying system and the rapidity with which the coating solution is fed to the applicator roll. In the past, because of this, their greatest use has been in paper coating where quantity coating is the rule. Their worth is being recognized for cloth coating of certain types, and in the future they will, without doubt, be popular in the textile field.

ETCHED ROLL COATING. An intaglio or rotogravure printing machine is not commonly thought of as a coating machine, but of course it is. As it has little value for the general application of plastics to paper or cloth, it need be no more than mentioned here. Its greatest use as a coater has been for the application of one color to one side of a fabric, and a contrasting color to the opposite side with the least possible increase in weight of the fabric.



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DEFECTS in Woolen Fabrics

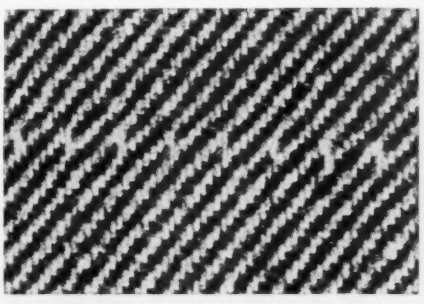
HIGHLIGHTS: Causes of Defects in Woven Wool Fabrics Defined—Imperfections Illustrated and Appearance Described—Common Causes Listed.

By FRED SYKES

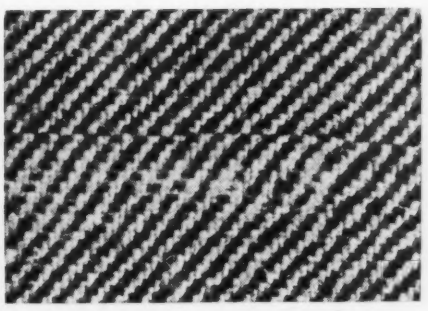
WOVEN WOOLEN FABRICS frequently contain imperfections that do not appear in cloth woven from other yarns. Then, many of the imperfections which appear in fabrics made from other yarns will take on a slightly different appearance when found in woolen cloth. Recognizing this fact, TEXTILE WORLD is presenting the first in a series of fabric defects devoted exclusively to woolen cloth.

Other defects covering cotton, rayon and jacquard fabrics have been published in earlier issues of TEXTILE WORLD. Many of the definitions given have been approved and included in the "Glossary of Textile Terms Relating to Textile Materials," issued by Committee D-13, ASTM. In addition, the Army Quartermaster Corps has ordered several hundred reprints of the entire series for use in training field inspectors.

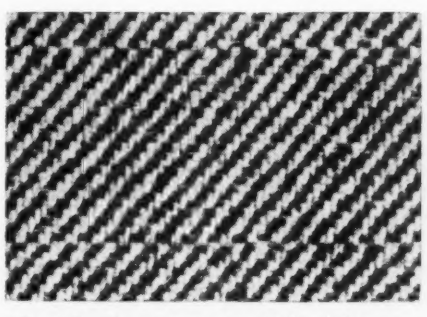
Operating executives, weave-room overseers, fixers, burlers and menders will find this series of assistance to them in their everyday work. The defects illustrated and defined are offered with the thought that they may assist in the formation of a standardized nomenclature for defining defects occurring in woven fabrics. Also, they should be of assistance in correcting such defects as they appear because listed beneath each fabric is a number of the most common causes for such fabric imperfections.



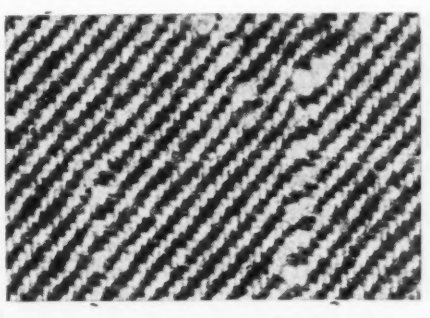
Harness Skips—*Appearance:* A broken pattern extends across the width of the fabric and more pronounced than double picks. *Causes:* Broken and worn vibrators, pattern chain worn, and excessive play between risers and sinkers. Also, broken risers or risers worn flat and broken harness straps will cause this defect.



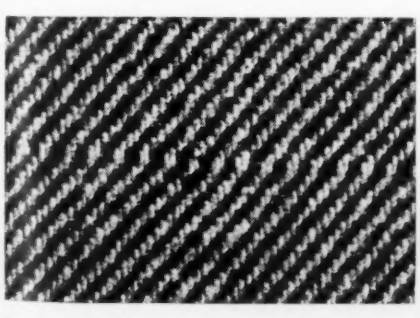
Light Places—*Appearance:* Openings appearing between picks, creating thin places in fabric. *Causes:* Slubby yarn removed and filling not scratched up. Picking out and not letting off the sand roll and the cloth roll. Careless starting after broken filling. Uneven yarn, warp let-off not working correctly.



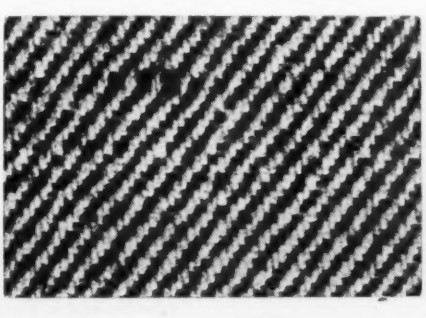
Mispick—*Appearance:* A single pick woven into the fabric in such a manner as to break the pattern. *Causes:* Uneven and twitty yarn, filling yarn breaking and catching again, stop motion not working correctly.



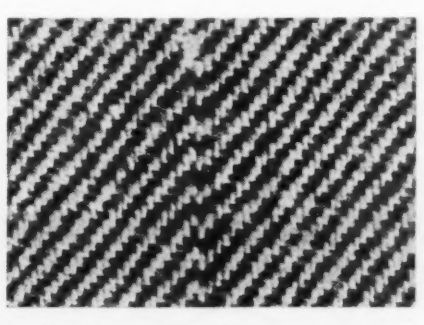
Knots—*Appearance:* Occasional breaks appearing in pattern, usually with a yarn-end projecting. *Causes:* Not spreading knots when tieing at the dresser, too long a tail left on knots, poor yarn, careless burling.



Double Picks—*Appearance:* Break appears in pattern and extends the full width of the cloth. *Causes:* Badly wound filling and filling sluffing off bobbin; ends catching on filling cutter, and not sufficient tension on shuttle are contributing causes. If correct pick is not found after a filling break this defect may appear.



Slubs—*Appearance:* A slight break in pattern caused by either warp or filling yarn or both having uneven thickness. *Causes:* Uneven carding, fancy on card wrapping, fly dropping in card, waste collecting on tapes. Also dirty spinning, allowing too much lint to collect around roving. Slubs should be taken out in burling.



Broken Warp End—*Appearance:* Break in pattern running vertically in the fabric. *Causes:* Thin place in the yarn causing it to break, knots slipping, poor dressing, warp ends crossed, slivers and rough spots in or on shuttles, worn heddle eyes, large knots, wrong timing of shed, warp riding lay and worn reeds.

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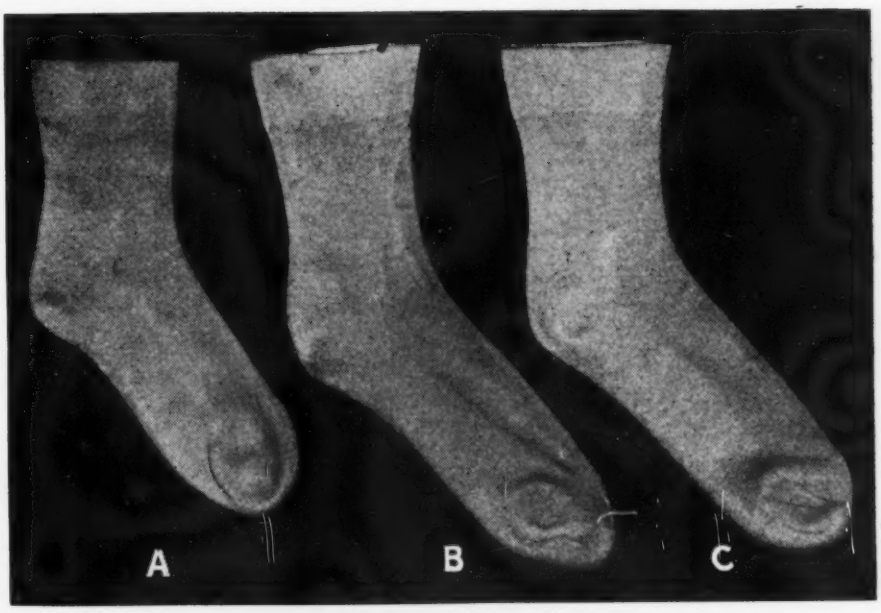
SHRINK-RESISTANT Process for Army SOCKS

HIGHLIGHTS: Hosiery Mills Can Process Socks in Own Dye Houses—Dye Requirements are Reduced — Longer Processing Time and Close Chemical Control Required.



Results of QM tests on untreated and on treated socks. Shrinkage obtained in test shows that sock A which was untreated shrank from a size 12, as shown in B, to size 9½. Treated sock C did not shrink or felt. *Photo by Philadelphia Quartermaster Depot*

THE NATURAL TENDENCE OF WOOL TO FELT has, to this date, been a stumbling block in obtaining satisfactory service and wear from part wool socks and from underwear used by the Army. Recent developments made by the Research and Development Division of the Philadelphia Quartermaster Depot have advanced to such a stage that some hosiery mills are now treating for shrink-resistance, part-wool Army socks procured under recent bids.

One advantage obtained by these mills using these processes, in addition to shrink resistance, is a greater penetration of the dyes applied to the wool fibers, resulting in a slight saving of dyestuffs. However, this treatment doubles the time required in wet finishing and unless a mill has available capacity or additional equipment, additional working time is required. Also because of the deleterious effect of incorrect application on both the wool fibers and the dye penetration, a close chemical control is essential. Chemical treatment of socks to prevent shrinkage has proved practicable, and in time it is hoped that arrangements can be made to have all Army part-wool socks so treated.

Exhaustive tests indicate that treated socks will wear up to 40% longer than those untreated. Laundering tests have been developed at the QM Depot which will subject the socks to an amount of felting action equivalent to several launderings in the field. Results of such tests are shown in the accompanying illustration. The sock marked A was not treated, and during the test shrank from a size 12 to 9½. It was badly felted. Results of some tests have shown that socks were so badly felted that it was impossible to run one's hand inside of them. Sock B shows the original size 12 before being subjected to tests. The chemically treated sock after testing is shown as C. This sock did not felt or shrink and practically all of the original elasticity in the sock was present. While recent changes in sock specifications, namely from the use of not lower than 60s wool to an average of 56s wool in the leg, and 54s wool in the foot have contributed towards reducing sock shrinkage, the chemical treatment is responsible, mainly for shrink-resistance and felting-resistance.

CHEMICAL TREATMENT. Essentially, all chemicals used currently accomplish one purpose; a limited chlorination of wool.

British mills have, for many years, utilized non-felting wools for clothing the armed forces and for civilian purposes. A variety of processes has been used in England, such as the wet chlorination process using hypochlorites, and like agents, and also a dry process using compounds which are dispersed in the vapor state. Methods used by the QM follow closely the wet hypochlorites used in England, but with some changes.

For example, English methods favor treating wool in raw-stock form or in the yarn, whereas the QM methods involve the treating of finished socks in the gray.

The chemical shrink resistant treatment depends on the chlorination of wool fibers in the socks, and actually causes some degradation of the wool. The hypochlorites are used in conjunction with other retarding agents which produce a buffer effect. By this method, together with strict control of concentration and processing time, extensive damage of the fiber is prevented.

The technical problems involving the choice of chemicals and the actual processing to prevent overtreating of the socks are being given careful consideration by the Philadelphia QM Depot. Also, the development of suitable test methods and standards which may be employed by the laboratory inspectors is also being worked out. When these problems have been solved, definite specifications covering shrink-resistant treatment of socks will be issued.

Like developments are being considered for 50% wool underwear procured by the Army. As yet, development has not reached a stage where information can be released.

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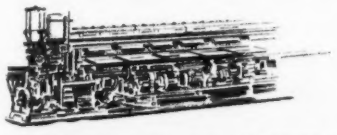
POSTWAR Hosiery Machines

HIGHLIGHTS:—Full-Fashioned Machines Will Be 30-Section, 51-Gage, With 14-In. Needle Bars—Refined Circular Machines for Women's Nylon Hose.

HOSIERY MACHINERY for the postwar era was discussed at the meeting of the National Association of Hosiery Manufacturers, in New York, April 21, by Paul Kroener, of Textile Machine Works, Reading, Pa., and Ralph E. Thompson, president of Scott & Williams, Inc., New York.



FOLLOWING IS AN ABSTRACT OF MR. KROENER'S REMARKS:

30-SECTION. Contrary to rumors that may have come to your ears, we are definitely committed to the idea that long section machines are most economical from the standpoint of initial investment and low production costs, permitting at the same time a relatively high wage level. Some manufacturers may use 26-section machines because of limitations in the floor space in present buildings, but we believe that the machine for the postwar period will be 30 sections.

In speaking of the needle section, we cannot stress too highly the importance that this section be no less than 14 in., which is equal to 476 needles in 51 gage. There have been occasions in the past where manufacturers have requested 15-in. heads equaling 510 needles; however, we have no intention of changing the present standards, since 476 needles has proven to be quite adequate. There will be refinements, of course, made possible by better tools, better methods, new testing apparatus; but nothing radical—no push-button arrangement and an easy chair.

You can expect a machine that operates more smoothly because of new developments in the construction of shock absorbers, individual section control to compensate for contraction and expansion, and other devices which will reduce vibration to a minimum. And to meet such problems as the elimination of hand labor, improved hook-up attachments will be available. Yes, you can also expect welt turners that will be simple and reliable in operation.

GAGES. Not so many years ago, even some experts were of the opinion that it would prove difficult, if not possible, to train help for the operation of fine-gage machines of the 45- and 48-gage type. But mechanical refinements have made it possible to produce long-section 51-gage machines for mass production of full-fashioned stocking of sheerness and beauty.

This machine has proven to be of great versatility. It will readily knit stockings ranging from 15-denier to 30- and 40-denier nylon or from 2-thread silk to 7-thread silk. It is, we are certain, the machine that meets the requirements of the postwar period; and, while finer gages are mechanical possibilities, there are distinct limitations as to gage, and we believe also as to prices for stockings in a competitive market.

There is no doubt that extreme fineness in gage increases manufacturing costs to a very considerable degree. Take, for instance, a 60-gage machine with 40 needles to each inch in a 14-in. needle bar. There are accentuated problems of expansion and contraction, yarn problems, etc., and, in consequence, limited production and increased costs.

SPEED. As there is a limitiation to gage, there is also a limit to speed with the known types of full-fashioned knitting machines. A practical limit has been found in 80 to 85 courses with speed variations in narrowing and plating. We have given special consideration to the problem of speed ratios. With a 1–10 ratio operation, a new motor drive which will be available with the new machines has been highly satisfactory from a knitter's viewpoint as well as from the angle of electrical performance and efficiency.

From the manufacturing standpoint, there are many advantages in the simplified so-called rounded-heel stocking construction. From a technical viewpoint, the conventional legger-footer construction provides a heel pocket that is superior to any other construction and assures a well-fitting heel; but, whatever opinion may be on this point, you can rest assured that we will be well prepared to supply the needs of the market.

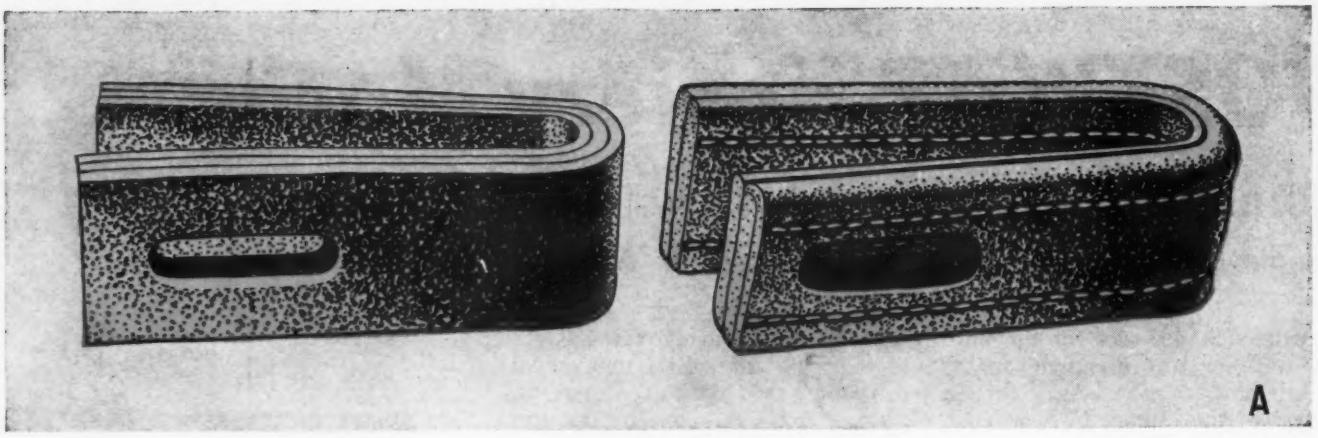
FOLLOWING IS AN ABSTRACT OF MR. THOMPSON'S REMARKS:

IMPROVED SKILL. The skill in manufacturing gained through war work will be translated into more uniform and better knitting machines. Replacements can be more readily installed with less fitting, and adjustments made much easier and less frequent for the fixers.

No-seam nylon hose appeared in small volume just before being stopped by the war. It met with instantaneous dealer and consumer acceptance. There was a very clear indication that a large percentage of wearers gave their approval to a stocking that did not require the keeping of the seam straight—gave foot comfort, and showed off the natural contour of the leg. Knit from the same thread by circular machines of equivalent gage, given the same care in manufacturing and merchandising, and with a permanent form-fitting shape, you must consider it an equal companion to the full-fashioned nylon stocking.

The public has voted in favor of sheer nylon hose, which has created a demand for new knitting equipment of finer gage, both full-fashioned and circular. The pent-up demand for sheer nylon hosiery is so large that the production capacity of the manufacturers of both types of knitting machines will be severely taxed.

TRAINING. In the past, we found it extremely valuable to have the mills work closely with us, by sending their knitting-machine fixers to the factory to become thoroughly familiar with the new types of machines. These fixers went through a training course which included the assembling of all the component units into a complete machine, the proper adjustments for mechanical operation, and necessary technical instruction directed to the threads and the fabric. We are planning to enlarge our training school.



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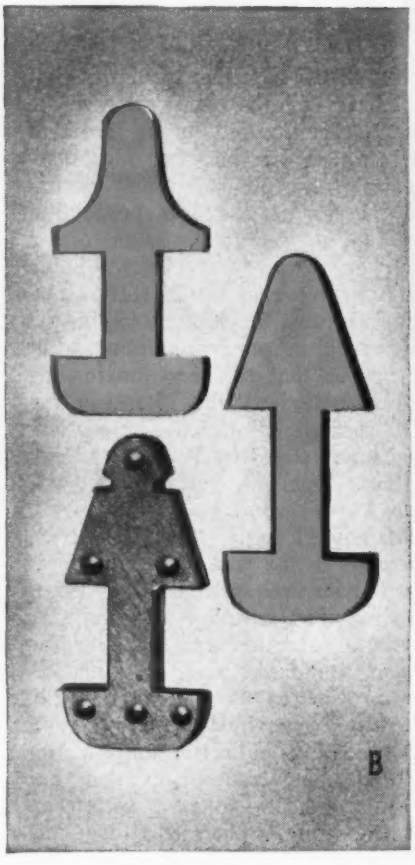

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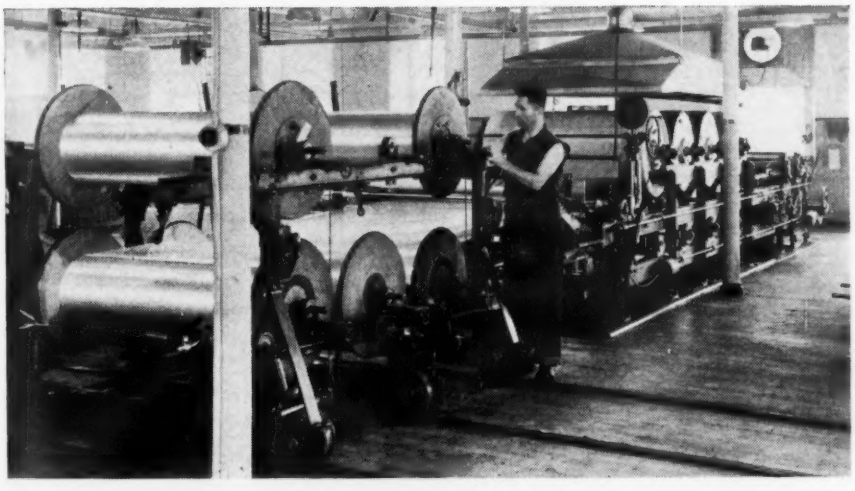
Methods for CONSERVING GELATIN

HIGHLIGHTS: Modified Casein Product Used for Slashing Acetate Rayon—Gums Substituted for Viscose —Resins Show Promise—Extenders Are Possible.

By C. W. BENDIGO
Assistant Editor, TEXTILE WORLD



Note covered cylinder used when slashing acetate rayon. *Courtesy Pepperell Mfg. Co.*

PREVIOUS SHORTAGES and scarcities of glues for sizing rayon warps have done much to prepare this branch of the textile industry for WPB order M-367 that limits use of glues in textiles to 75% of the amount consumed the last six months of 1942 and the first six months of 1943. This conservation order ended a period of uncertainty for many plants and permitted them, often for the first time, to make definite plans to take care of their requirements.

The WPB restriction applies to hide glues, which are practically the only type used in slashing rayons. The term "gelatin" rather than "glue" generally is used in rayon weaving plants, although the product that most use, technically, is glue.

Over a year ago, due to government purchases of certain grades of glue that are used for sizing rayon, shortages developed that caused serious concern. Efforts were then intensified to find substitutes and to conserve supplies. This took three forms: (1) use of formulas needing less gelatin, (2) use of substitutes, and (3) use of extenders.

It has long been known that certain of the gums which are obtained from starches are quite satisfactory for use when sizing viscose process yarn. Practically every starch manufacturer that serves the textile trade has a modified starch or gum suitable for slashing viscose-process rayon. Many weaving plants conserve their stocks of gelatin for use on acetate yarns by changing their viscose slashing formulas to those that use gum. When changing, the amount of gum has to be increased in order to obtain the same weaving results as with gelatin. For example, a 100-gal. bath which uses 22 to 25 lb. of gelatin of medium grade requires from 45 to 50 lb. of gum.

GELATIN SUBSTITUTIONS. Numerous substitutions for gelatin have been attempted in slashing acetate process yarn; but none have been very successful commercially, except the modified casein sizes. One of the first problems with casein was developing a product that would be sufficiently soluble. After this was achieved, some difficulty was encountered because the casein sizes had a greater tendency than gelatin sizes to come off on the slasher drying cylinders. This finally was overcome by addition of oils of the proper type. Some casein sizes currently on the market for use on acetate yarns do not require the addition of oils, as are normally added to gelatin. These casein products have blended with them the necessary softeners, plasticizers, and lubricants.

To date, it generally costs more to employ casein than gelatin mainly because of the difference in price, and because greater quantities of the casein product generally must be used. But in one fabric at least (French crepes) the additional cost appears to be worth while, as a more desirable fabric can be achieved. There is still some question as to whether or not casein products are suitable for the more difficult acetate constructions.

Many plants have learned that they can conserve their stocks of gelatin merely by reducing the quantities which are used in their formulas. This reduction is generally accompanied by a reduction in the oil that is added. For example, one plant found that, instead of using 80 lb. of gelatin and 20 lb. of oil, it achieved comparable results by using 65 lb. of gelatin and 7 lb. of oil. This was based on gelatin of 225 grammage for a 200 x 72 satin.

Considerable experimentation is being carried on to develop synthetic sizes for use on acetate yarn, and quite a number of products are in the trial stage. Probably one of the more outstanding developments along this line has been the discovery of a synthetic resin which can be used as an extender for gelatin. This extender has the power to modify the size film more than is normally possible when using the customary oils. This control is in addition to saving gelatin. The use of extenders, although prevalent in certain mills, has not spread throughout the industry to any great degree. It can be expected, however, that as gelatin continues to be limited, use of extenders will increase. Starch types are sometimes used.

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Fig. 1. Box stains caused by oil splash.

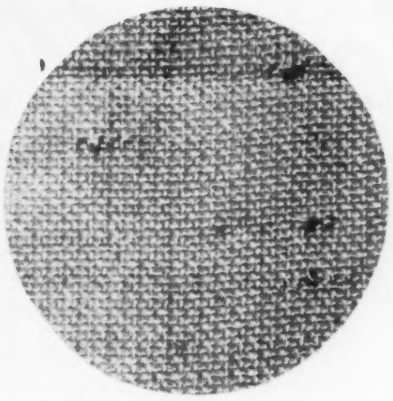

Fig. 2. Kinky filling due to liveliness.

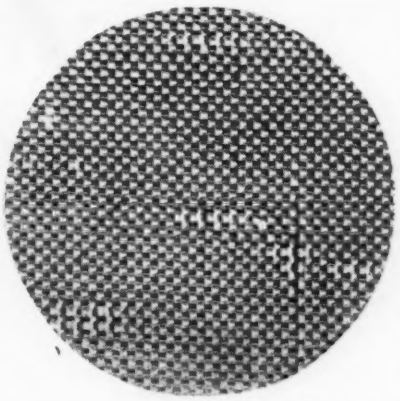

Fig. 3. Slack filling made by rebounding shuttle.

RECURRING DEFECTS in Synthetic-Fiber Fabrics

HIGHLIGHTS: Regularity Assists in Determining Cause — Secondary or Contributing Factors Often Found.

By
ROBERT E. SPEAR

THE THREE FILLING DEFECTS illustrated on this page are among those more frequently found in a synthetics weaving plant. Of the three, the one involving stains is probably the most prevalent.

The soiling illustrated in Fig. 1 can quickly be traced to a dirty shuttle, box, or adjacent equipment. Correction should not be difficult. The loom should be stopped and examined until either the source of contamination is found or there is no doubt that it no longer exists. Frequently oil or grease that splashes on equipment is cleaned off by the threads or cloth before its presence is known, but not until it has contributed to placing the cloth into "dark shades" classification. The cloth illustrated, nylon, is susceptible to soiling but, fortunately, is also relatively easy to clean, either by spot-washing during inspection or by normal finishing.

Another type of filling stain that frequently recurs or forms patterns (not illustrated) is that caused by yarn becoming soiled after being wound on filling bobbins. Frequently it forms diamonds or other geometrical patterns in the cloth. A third type that often appears, but at less regular and less frequent intervals, is soiled filling at or near knots. Occasionally this is caused by the knot forcing the thread to run in an abnormal position and thus it picks up dirt that has accumulated. But most times, soiling at or near knots can be traced to the operators who tied them.

KINKY FILLING. The regularly recurring defect known as snarled filling or kinky filling can be caused either by deficiencies in processing the yarn or in loom operation. The kinked voile filling illustrated in Fig. 2 was found to be caused by improper twist-setting, although a contributing factor was improper boxing of the shuttle, as could be suspected from the fact that the kinks all formed about the same distance from the selvage. The customary test for lively filling is to pull the yarn off the filling bobbin without applying tension and to hold both ends, forming a loop. If the yarn forms snarls, it is not set sufficiently. If it hangs reasonably limp, it is.

Practically all lively yarn is caused either by improper setting, which is infrequent, or by an increase in moisture content, which often occurs. In either case, additional twist-setting is the remedy. Normally only a slight amount is necessary.

Frequently, kinky filling occurs in larger snarls than are illustrated. Then it is usually termed "snarled" filling. When still larger bunches appear in the cloth, the terms "ropy," "roped off," or "sloughed-off" are applied. This defect might be caused by improper setting but more frequently reflects poor filling winding or improper furring of the shuttle.

When picks frequently have several tiny kinks across the face of the cloth, these defects most likely are caused by insufficient shuttle tension and are termed "slack picks." Such kinks are not normally caused by insufficient twist-setting.

REBOUNDING SHUTTLE. At first glance, the slack filling yarn illustrated in Fig. 3 appears to be caused by insufficient tension in the shuttle, but in the cloth shown the defect occurred only near one selvage and not across the face of the cloth. This is rather clear evidence that a rebounding or "bouncing" shuttle was responsible.

The rebounding could be caused by insufficient binding which failed to stop the shuttle, with the result that it bounced back slightly and allowed the pick to become slack. Insufficient binding might be caused by too much power on the pick, which means that correction could be made by using less power rather than by increasing the binding.

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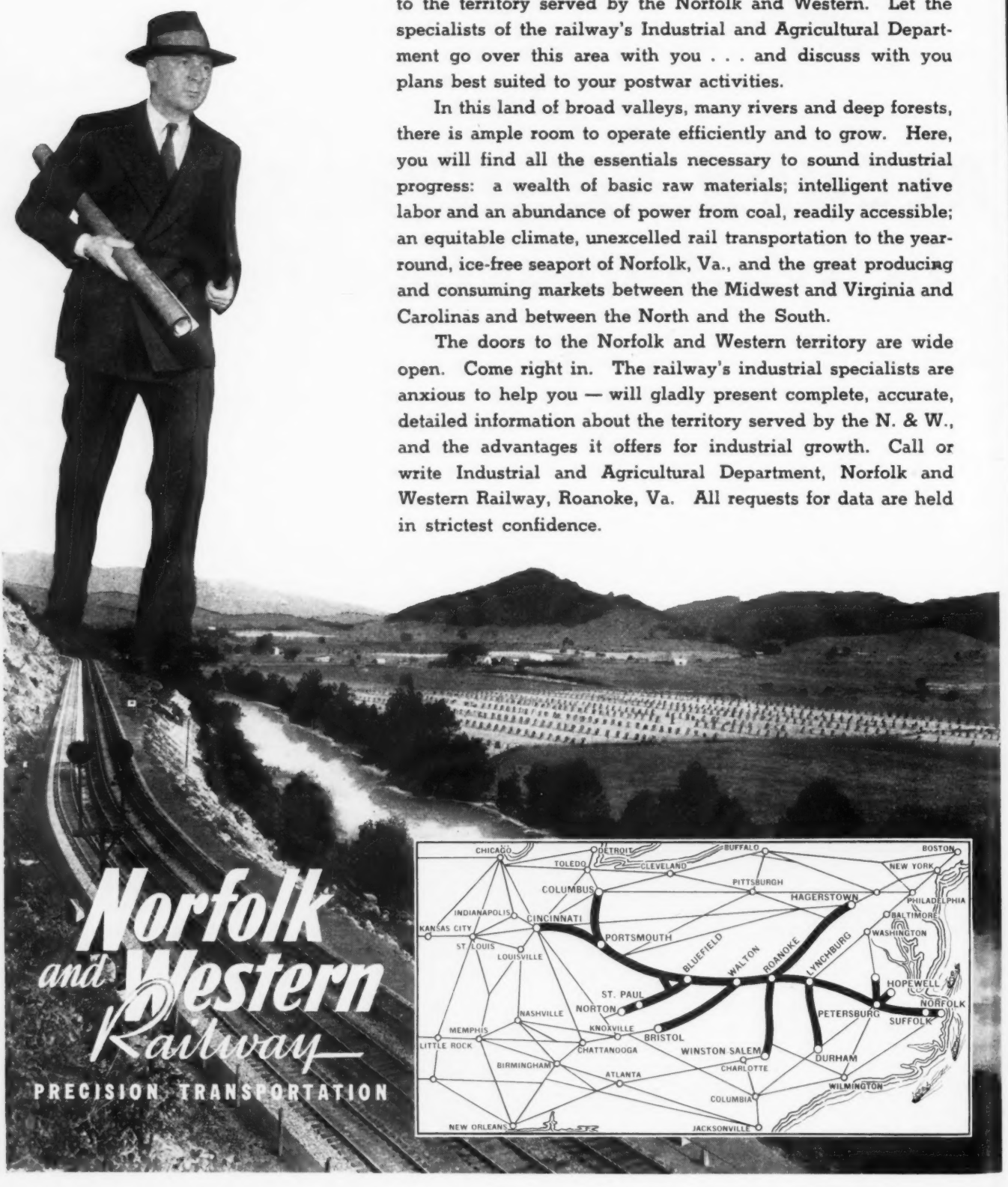


Postwar Opportunities for WOOLEN MILLS

HIGHLIGHTS: Improved Equipment and Methods Necessary—Imports Threaten, While Exports Promise.

By HAROLD E. REED

*Assistant Editor, TEXTILE WORLD**

IN THE SURVEY published in the February issue of TEXTILE WORLD, it was disclosed that the woolen branch of the textile industry considers its most important postwar problem to be that of reducing costs of manufacture. It is probable that a large number of woolen men quizzed in the survey were thinking about new machinery and improved handling procedure.

Machinery changes have evolved which place a well-equipped mill in an excellent position to become a leader in the postwar era. The ring-spinning frame and the giant-package mule were some of the early improvements made. We have to contend with the automatic looms and with the filling-mix mechanisms for those looms. Electronic devices are entering the picture, not only for opening doors, but for operating stop motions during jack spooling, and for many other applications. Continuous dyeing of indigo, solvent cleaning, infra-red drying for carbonizing, and possibly high-frequency drying are worth consideration. Recently a machine was introduced into this country for the sole purpose of replacing carbonizing operations. It is possible that developments in spinning, such as a pot-spinning method, may change or alter the present system of spinning wool yarn.

Extensive wool-fiber research is being conducted by the National Bureau of Standards.

NEW FABRICS. The woolen branch, according to the survey, appears to be the least concerned about the development of new products; but outstanding developments are coming out of this war as the result of research.

Army tests indicate that, through careful selection of the quality of wool and the use of certain treatments, it is possible to prevent shrinking and felting and obtain an increase of 40% in the life of wool socks. Blankets have been procured which are held down to a maximum shrinkage of less than 5%. Mothproofing has made excellent progress.

The men and women of this country, particularly the defense workers, have become conscious of woolens for sports-wear. We may see extensive use of blends, particularly the blending of various types of rayons and perhaps other synthetics with wool, in the production of low-priced sports-wear. However, there appears to be a large potential market in highly styled, high-quality sports-wear woolens for both the domestic and foreign fields.

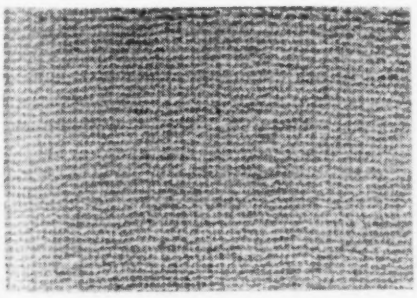
Highly styled fabrics, while offering a lucrative field for a small, well-integrated woolen mill, also offer a number of hazards. A small woolen mill is capable of making such rapid changes on style goods long before larger units can switch from the production of one type of fabric to another. Brand name is becoming increasingly important in the highly styled field.

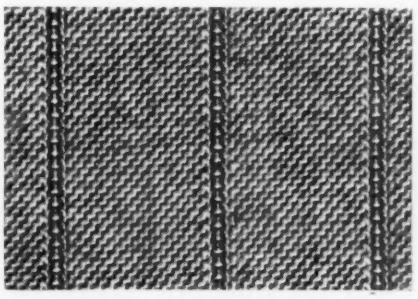
FOREIGN COMPETITION. The British utility fabrics are manufactured according to strict government regulations and in a comparatively small number of lines. Volume production and low cost of manufacture are two of the features of these fabrics which bear the government hallmark of branded quality. At the time when British exports of wool cloth were cut off to this country, an official British-government announcement boasted that "already qualities of Yorkshire tweeds have been sent to the re-conquered areas of Russia, and whole settlements in Russia are now wearing utility cloths which have been made in Russian factories." It appears that Great Britain not only wishes to retain past markets for woolens but also develop new ones.

The Office of Foreign Relief and Rehabilitation Operations in this country has developed tentative plans for clothing and rehabilitating some of the liberated countries. While small shipments of clothing have already been made, extensive operations have not been undertaken. As the occupied countries are liberated, bids will be requested for low-grade, low-priced woolens to be made into garments for the liberated peoples.

EXPORT MARKETS. I firmly believe that it is possible for a small woolen mill, properly organized and with an alert styling and merchandising department, to build up a very profitable export trade with Latin America. However, there are numerous factors that must be considered. First, the line of fabrics exported must be of a very high style and of high quality. Many of the South American countries have woolen mills and are manufacturing some high-grade fabrics. To illustrate the competition that you will have with local mills a number of high-quality fabrics manufactured in Mexico are illustrated. The major portion of Latin American textile fabrics, however, falls in the low-priced, low-quality lines.

If we are to cultivate this market, our textile executives should make a trip through the Latin American countries and determine exactly what these peoples want.





High-quality woolens manufactured in Mexico. Left, a fine woolen for the women's wear trade. Right, a worsted suiting fabric.

**Abstract of talk before Wool Manufacturers of the State of Maine, at Augusta, April 27.*

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Textile Engineers Discuss SAFETY

HIGHLIGHTS: Textile Section of 32nd National Safety Congress Meets—Accidents Prevented by 5-Point Program—Women Show Lower Lost Time Accident Record.

Making and Maintaining A Good Safety Record

THE NO-LOST-TIME RECORD at the Sayles Biltmore Bleacheries, Inc. plant at Biltmore, N. C., is being maintained because of close cooperation between management and employees. Without the support of both, any accident prevention program is doomed to early failure.

"There is a great deal of satisfaction," states R. S. Shaw, safety director at Sayles, "derived from attaining an outstanding goal in accident prevention, and it is a most contagious thing, as everyone catches the fever when nearing a specific goal. We have heard men who have never shown much interest in safety say to their fellow workers: 'I hope nothing happens to break our record'. That is just how it is at our plants. The record belongs to the man and woman on the machines and everything humanly possible is done to preserve it."

A lot of thought, a lot of time, a lot of planning, and a lot of action is behind this program to eliminate accident hazards. The new employee is first examined by the plant physician who either accepts or rejects him. If accepted, any physical corrections necessary, such as bad teeth, are noted on the examination certificate and the employee is required to have these defects corrected within a given time. In the meantime he is working on the job for which he was employed. The safety director then takes him in hand and explains the objectives of the safety program, placing emphasis on the hazards he will encounter on his new job. He is impressed with the importance of reporting any accident, no matter how small or slight, to his foreman, and then to the first aid room for treatment by the nurse; reporting any unsafe condition to the foreman, and is warned against any horse-play on the job.

The foreman explains the safe practices of the department in which he is to work and the safe way in which to do his job. He is then left in the charge of an older employee, chosen for his ability to work safely, who teaches him and advises him until he is sure he can carry on without injury. To these first carefully planned steps goes credit in a large measure for the success of the safety program at this plant.

Another important step in the program is the monthly safety inspection and report. This inspection is made by the safety director and is for the purpose of uncovering any hazards that might exist either in the manner in which the work is being done, or in the machines themselves. The reports go first to the foreman, then to the managers, and eventually to the departmental meetings. Many valuable suggestions come out of these meetings. There are also meetings for foremen at which the safety engineer of the insurance company may make an address, or show a picture.

"One of our very important committees," reports Mr. Shaw, "is our general plant safety committee, whose function it is to make recommendations and investigations. The committee chairman is our assistant master mechanic and the other members are appointed from the various departments, rotating every six months. The safety director and nurse are also on the committee. The management is always represented at the meetings of this committee."

Credit goes to the first aid room for preventing many minor injuries from developing into more serious cases. . . . "We have not had an infection case in twelve years" states Mr. Shaw, "which not only speaks well for the kind of first aid rendered but it also shows how promptly our people report minor injuries."

It is interesting to note that this plant, which employs approximately 800 people, makes use of a full-time safety director and a full-time nurse. In the reduction of absenteeism, lost-time accidents, medical cost and compensation, the investment has paid dividends.

Housekeeping Prevents Accidents

HOUSEKEEPING plays an important part in preventing accidents, according to H. E. Williams, safety engineer, Marshall Field & Mfg. Div., Spray, N. C. "The provision of a safe physical working environment is a job of housekeeping." Continuing, Mr. Williams reports, "Housekeeping may be defined as a system of maintaining a clean and orderly working condition inside and outside the plant. Such a system must be controlled, and the habits and actions of the personnel must conform and adhere to the planned operating arrangement."

Splinters, cuts, and eye injuries, puncture wounds, and fires, may be blamed on poor housekeeping, and the reduction of many of these depends on a good housekeeping plan.

For any size mill, or group of mills, a plan can be devised that will fill the requirements. Most employees are interested in doing their jobs in a safe, orderly manner if a daily routine is set up which includes the following: 1. Interior cleaning program. 2. Interior zoning and arrangement plan. 3. Exterior cleaning schedule. 4.

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Painting plan. 5. Inspection follow-up system.

The interior cleaning program in a small plant might consist of one crew, but in a large plant it may be advisable to have three crews—one for sweeping and cleaning, one for scrubbing, and one for window washing. Where three crews are used, the consolidation of sweepers and cleaners into a crew responsible to one supervisor will do much toward getting the work done efficiently. Sweeping, alone, is not adequate to keep the floors clean and safe. Scrubbing or scouring is necessary in order to remove dirt and grease.

Zoning and arrangement are component parts of order. Many operations cannot be streamlined to a chain conveyor assembly line, but well-planned, straight-line flow of production can be a part of every mill's planning and many accidents can be thereby prevented. Good housekeeping should extend to the grounds and should of course include traffic control if the mill yard is to be safe.

"Many industrial accidents occur because of some difficulty in seeing the equipment and materials", states Mr. Williams. "Many of the accidents happen to employees with satisfactory eyesight. The accident cause in these instances is usually insufficient contrast, insufficient light or failure to recognize the hazard. The proper use of paint can do much to eliminate accidents from these causes."

Paint manufacturers are studying these conditions and expert advice can be procured from them. Contrast and color play an important part in preventing accidents, increasing production, and in building morale.

Employing Women Workers

SOME MILLS EMPLOY WOMEN AS LOOMFIXERS, a job formerly handled entirely by men. "Tell women they cannot do a certain job", reports John J. Burger, secretary, safety committee for W. J. Dickey & Sons, Inc., Oella, Md., at the Safety Congress and "that is the one thing they demand to do." Any job which is too strenuous for a healthy vigorous woman to handle is inefficiently and improperly set up, even for a man.

"The feeling is now becoming more and more widespread especially among the more progressive employers," according to Mr. Burger, "that in general, any problem presented by a new woman worker is fundamentally no different from any problem presented by a new man worker. Many of these women employment problems are basic labor problems and require solution similar to those promoting the welfare, safety, and efficiency of men workers."

Women have always been workers, especially in the textile industry, and there is no mystery connected with employing them. Mary Anderson of the U. S. Dept. of Labor recently stated, "Give women the right kind of training and supervision, and they will do a man's job." But, certain physical factors must be considered, such as problems relative to: (1) physique and selection, (2) training, (3) clothing and guards, (4) sanitary facilities, and (5) temperament and home conditions.

Mr. Burger believes that training of women in the past has sometimes been neglected, he says, "a very common statement is that women have no mechanical ability. This statement would be more accurate if worded, 'women have no mechanical familiarity'. In the past, few women have had an opportunity for mechanical training and many jobs have been closed to them entirely. Because of this, it may be that somewhat longer and more elementary training periods are necessary. However, once confidence has been instilled, women often pick up with the work more quickly, especially on the repetitive jobs that we find so often in the mill."

Correct clothing, including the right kind of shoes, and caps designed to prevent straying hair, is most important from a safety angle and deserves serious consideration.

Present sanitary facilities for women should be expanded where necessary, or new ones built to afford suitable, and comfortable wash rooms. A matron, to look after the general welfare of the women employees and to supervise the rest rooms is desirable.

Finally, the matter of temperament should be considered—intangible but important. Among these are the reception of the new employee, the environment in which she will work, the helpfulness of the foreman, and the friendliness of her fellow workers in the department. The personnel or safety department should, of course, follow up each new woman employee and take a friendly interest in her progress.

"There appears some evidence that women are more careful than men to avoid accidents. One employer reports have 350 women who worked 417,000 women-hours without a lost-time accident. Another source states that the women employees represented one-third of the total but had only one-eighth the accidents."

These problems, Mr. Burger concludes, are not insurmountable, and with patience, tact, and training, and correct supervision, experience shows women to be highly desirable.

Dermatitis from Textile Finishes

SEVERAL INVESTIGATIONS of cases of skin irritation allegedly traceable to dyed and finished fabrics, were reported by Dr. Louis Schwartz, U. S. Public Health Service, Bethesda, Md. High alkalinity of the finish; the use of an ester gum; and, recently, the use of Japan wax were found on investigation to be the chief offenders. The finishes which are mildewproof, fungous proof, and germproof, are all composed of powerful antiseptics and germicides which in concentrated solutions are primary skin irritants and in dilute concentrations can sensitize certain individuals and cause dermatitis. Before being offered the public, such finishes should be tested in an approved manner.

Certain finishes required by the Armed Forces will cause dermatitis and some cases have been reported among workers applying these or handling the fabrics in the field. Some protection can be afforded the worker by mechanical devices, impervious clothing, such as sleeves, gloves, aprons, and boots.

Effects of Absenteeism on Safety

ARTHUR S. JOHNSON, American Mutual Liability Co., Inc., Boston, gives a new twist to the word "absence" as used in connection with safety. The absence of a definite policy on the part of management, he said, or the attempt to operate a safety organization without a top to it, one that has executive tolerance but lacks executive design, will result in failure to stop accidents. I hold no truck with keeping people on the job, when they should be abed, in order to make a no-accident record. But there is a tremendous amount of unnecessary time lost, first, by making big injuries out of little accidents through inadequate medical attention or failure to follow up cases; and second, there is some time lost because a bandaged hand does not interfere with fishing."

Accidents affect absence. Management, supervision, workers must all bear their own responsibilities and will do it best when they work within well-defined authorities. Management can not give safety absent treatment and avoid absenteeism.

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Far-sighted companies like the Jos. Schlitz Brewing Company of Milwaukee have restored and maintained their structures in first class condition to meet tomorrow's needs. Concrete surfaces such as these Schlitz grain elevators, and stucco and brick walls can be coated with Waterfoil for decoration and protection now. No need to wait.

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If you are responsible for property maintenance and investment protection, send for the Waterfoil literature . . . it is very important information.

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A HORN PRODUCT

RUNNING RAYON STAPLE On Cotton System

By FLETCHER S. CULPEPPER

HIGHLIGHTS: Spinning Rayon Staple is Similar to Cotton — Twist Factor 2.75 to 3.25 — Optimum Lengths for Strength Given.

Previous articles in this series appeared in the February and March issues of TEXTILE WORLD. They covered opening, picking, carding, drawing, and roving. The last, which will appear next month, will present two typical yarn organizations. The author, Mr. Culpepper, is a member of the staff of the Textile Research Department of the American Viscose Corp., and is considered an authority on the subject covered.

III. Spinning—Yarn Strength

SPINNING OF RAYON STAPLE is very little different from cotton spinning and is done quite satisfactorily on either long-draft or conventional type frames.

When 1 9/16-in. staple fiber is used on the conventional type frame, it is necessary to replace the middle top rolls with light self-weighted rolls, and to use dead weight only on the front and back top rolls. It is not usually necessary to make any changes on the standard long-draft frames for 1 9/16-in. staple; but this is the maximum length that these frames will ordinarily accommodate. There are, however, special long draft frames that will accommodate lengths from 1 9/16-in. to 3-in.

The twist factor for maximum strength in yarns spun from rayon staple fiber is lower than for cotton. Therefore, it is sometimes advisable to reduce spindle speeds in order to prevent excessive front roll speeds. On some types of yarn, advantage can be taken of increased front roll speeds and higher productions can be maintained.

Twist factors from 2.75 to 3.25, depending on the type, give maximum strength. However, for warp purposes a twist factor of about 3.50 is generally used, except when higher twist is needed for fabric effects. When higher than normal twists are used, lower yarn strengths will be obtained. Actual tests show that on average yarn counts, around 20/1 to 30/1, the decrease in strength is approximately 10% for every five turns of increase in twist.

Leather, cork, or synthetic top rolls are all satisfactory for medium counts using average deniers. On fine counts using fine deniers leather rolls are preferred. Synthetic rolls are very good when high twist yarns, such as crepes, are made.

Large diameter front rolls are quite beneficial in preventing lap-ups and excessive waste at the spinning frames. They will also result in slower roll speeds which will allow better drafting and high production.

Plush-covered scavenger rolls are quite helpful when running rayon staple since the scavenger waste can be more readily removed.

In order to help prevent sloughing-off in the weaving of filling, it is sometimes necessary to increase the lay and taper at the spinning frame. This is especially true on coarse yarns and when humidity conditions are not accurately controlled in the filling room or weave shed.

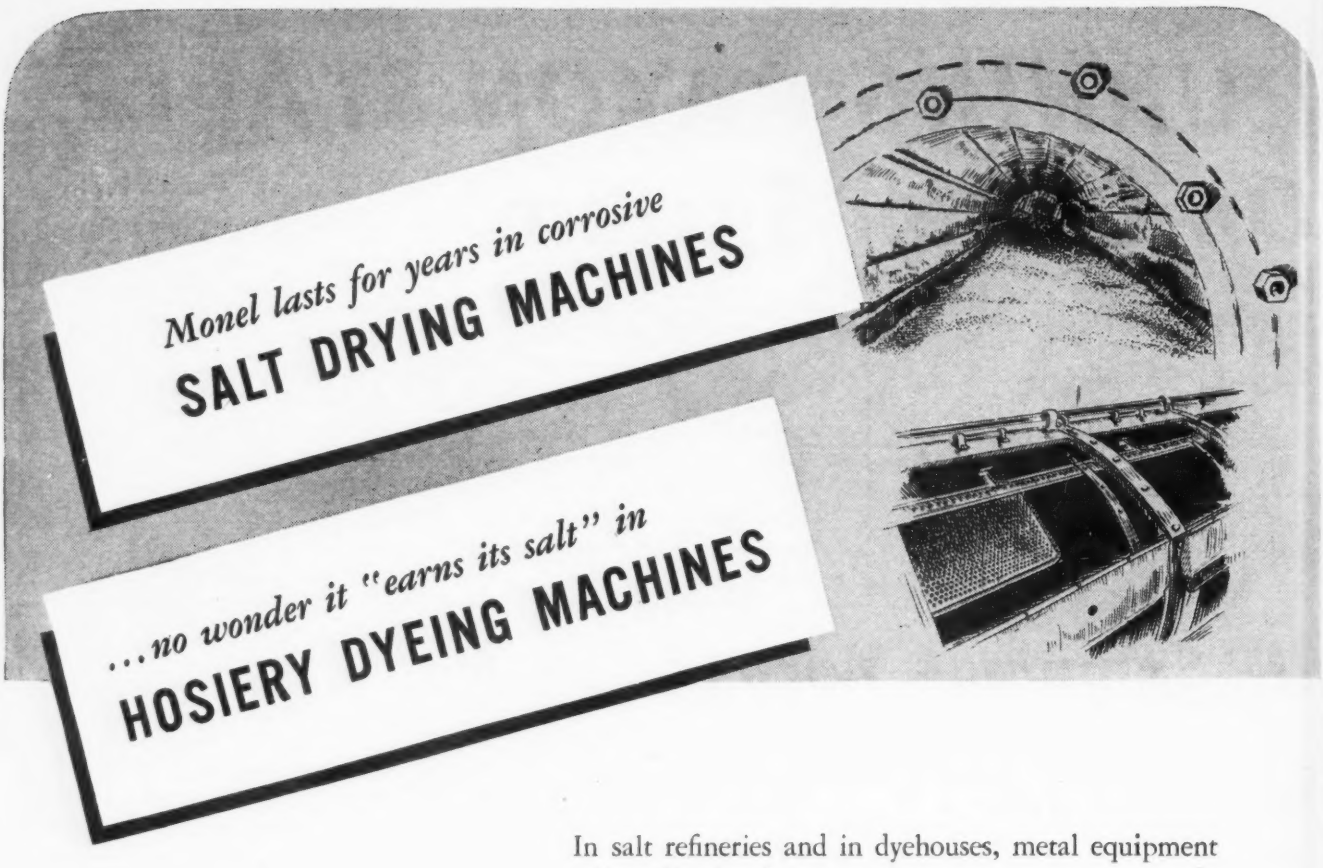
STRENGTH TABLE. In the accompanying table of spun rayon yarns, the figures for the finest counts represent approximate spinning limits of the various deniers in the specified lengths.

In regard to the effect of staple length on yarn strength, tests have revealed that starting with a 1-in. staple, the strength is increased from 12 to 15% for every ½-in. increase in staple length up to a certain point. On 1 den. and 1.25 den., the optimum length for strength lies between 1 9/16-in. and 2-in.; on 1.5 den. between 2- and 2¼-in. or about 2⅛-in.; on 3 den. between 2¼-in. and 3-in.; on 5.5 den. about 3-in. is optimum.

Thus, it is seen that no one length of the various deniers can be chosen as the length for maximum strength. Besides this, the optimum length for strength is not always the most ideal length, due to other processing differences.

STRENGTHS OF VARIOUS SPUN RAYON YARNS

Count	Lea Strength	Product
1 Den. 1 9/16-in. Bright (Strong Staple Fiber)		
5/1	545	2710
10/1	274	2740
20/1	135	2700
30/1	84	2507
60/1	32	1931
80/1	19	1525
100/1	14	1400
1 Den. 1 7/8-in. Bright (Strong Staple Fiber)		
5/1	565	2820
10/1	283	2830
20/1	139	2790
30/1	89	2680
60/1	35.5	2115
80/1	20	1600
100/1	15	1500
1.25 Den. 1 7/8-in. Bright (Strong Staple Fiber)		
5/1	535	2670
10/1	266	2660
20/1	134	2690
30/1	86	2580
60/1	29	1730
80/1	18	1450
1.5 Den. 1 9/16-in. Bright (Strong Staple Fiber)		
5/1	490	2450
10/1	240	2400
20/1	120	2400
30/1	77	2300
40/1	51	2040
50/1	33	1650
3 Den. 1 9/16-in. Bright (Standard Staple Fiber)		
5/1	410	2050
10/1	200	2000
15/1	120	1800
20/1	82	1650
24/1	58	1400
5.5 Den. 1 9/16-in. Bright (Standard Staple Fiber)		
5/1	270	1350
10/1	130	1300
15/1	67	1000



In salt refineries and in dyehouses, metal equipment takes a beating from a common enemy: *common salt.*

The *weight* of the attack, however, is different.

In the salt refinery it's more stepped up. There's a lot more corrosive "potential" in a load of wet salt than there is in a dye bath, where the salt concentration is much lower.

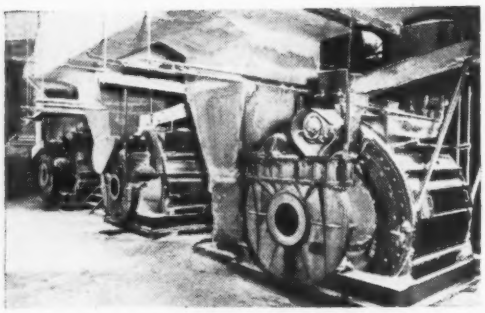
It's reasonable, then, that Monel . . . which serves so well for years in salt refinery equipment . . . serves so well for *extra* years in dyehouse equipment.

It isn't only a matter of *long life.* In the refinery, smooth corrosion-free Monel keeps the salt pure and white. In the dyehouse, smooth corrosion-free Monel protects delicate fabrics...assures *true* shades and colors.

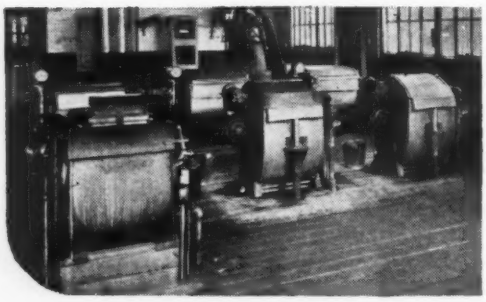
Many Monel dyeing machines, put in service during World War I, are at work today, helping maintain peak production. Their trouble-free service is especially important now, when repair parts and labor are so scarce.

If you are planning for your dyehouse of post-war, jot down this note: remember Monel equipment.

The International Nickel Company, Inc., 67 Wall St., New York 5, N. Y.



STEEL AIR CHAMBERS in this salt filter lasted only a year. Replaced with Monel, they were still serving after nine years of operation.

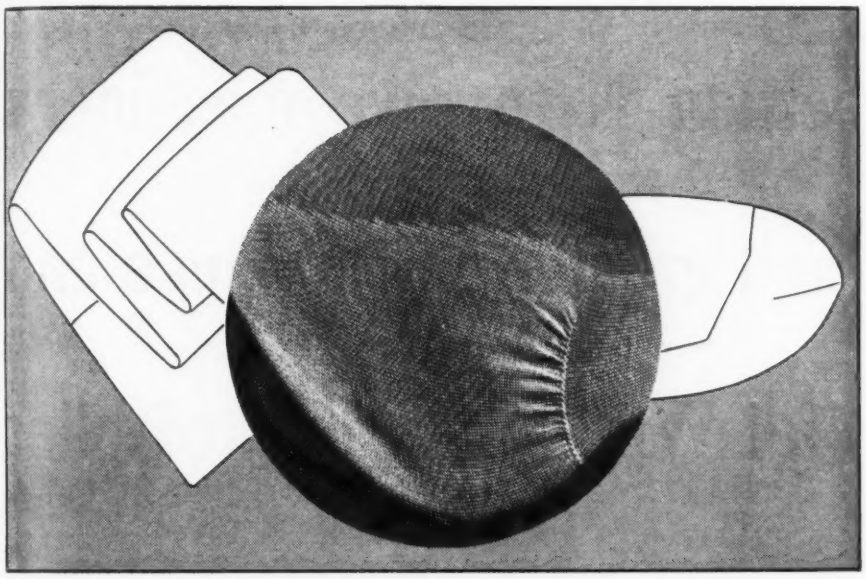


FOR OVER 15 YEARS these Monel Smith-Drum rotary hosiery dyeing machines have been exposed to alkaline and acid liquors. "Machines show no corrosion in any form" says the user.

MONEL for long-lived dyehouse equipment

Improved Fit with New FULL-FASHIONED HEEL

HIGHLIGHTS: Multiple Narrowing Is Feature of New Construction — Reduces Amount of Fabric in Insole — Manufacturing Rights to be Available Under License.



New heel is markedly different from older types. Note the characteristic pucker at the multiple-narrowing line, which gives visible evidence that there is adequate fabric in the heel and no excess fabric in the instep.

SEARCH FOR A SUPERIOR HEEL for single-unit full-fashioned hosiery has resulted in a new type which is being patented for Julius Kayser & Co. and is being sold under the trademarked name "Sta-Put." The construction, which is illustrated on this page, is to be made available under license to other full-fashioned knitters. It is understood that the multiple narrowing required for the new heel can be adapted to the later types of full-fashioned machines.

The need for an improved heel has been increased by the change from nylon and silk to rayon, but the Kayser development is expected to be of value regardless of the yarn. The Kayser organization points out that many single-unit heels are made of so-called average size proportions, reliance being placed on the stretch of the knitted fabric, plus whatever elasticity the particular yarn may possess, to provide the fit desired.

For many years practically all full-fashioned hosiery was manufactured of silk yarn, using the legger-footer method and incorporating the conventional or French heel construction. The effect of using this type of heel was to provide the stocking with sufficient material in the heel section to permit the foot portion to take a natural, or substantially right-angle, direction from the leg.

To overcome the shading effect caused by knitting the leg blank on one machine and the foot portion on another, complete stocking blanks were knitted with a simulated French heel. Because the instep continued to knit as the heel was produced, such stockings when worn could be expected to form wrinkles in the instep.

Another method, quite complicated, discontinued knitting the instep section while the heel tabs were being knit, and the resulting stocking conformed to the French-heel construction. A later development by Julius Kayser & Co. was a method of knitting a complete stocking blank on a converted legging machine without interruption and then inserting the necessary lower heel in a separate operation.

ROUND HEEL. The advent of nylon yarn with its elasticity and its preforming and shape-retaining qualities caused the round heel to find wide acceptance. This heel is produced by progressively widening the reinforced sections opposite the instep through the addition of a number of wales, and then progressively diminishing the width after the instep by narrowing the fabric inwardly while continuing to knit fabric into the instep where it is not normally desired.

The "Sta-Put" heel differs from the round heel in that it provides not only the required fullness of fabric in the heel, which is lacking in the round heel, but also forms this fabric into a heel pocket. This pocket is connected to the instep sole fabric so as to provide a resilient and flexible compartment, indicated by a puckering at this point. The construction is designed to permit the heel to adapt itself to fit any size foot, to prevent the heel from slipping out of place, and to prevent unsightly wrinkles from developing in the instep.

The stocking is knitted in the usual manner of the round-heel method up to the point where the heel has been widened to its maximum width opposite the instep; and then, instead of narrowing the heel at this point, the "Sta-Put" method continues to knit a full-width heel for a pre-determined number of courses to obtain the required fullness. Here the knitting is stopped but the heel is narrowed or transferred inwardly by a novel method of accumulating and concentrating loops on a group of needles until the selvage loops are at the desired width to start the lower instep foot portion of the stocking. It will be seen, therefore, that not only has additional fabric been knitted into this heel pocket, but also that the narrowing-in of the heel has been accomplished without further knitting of fabric into the instep.

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the order of the day here at Hyatt is precision ...high precision...*super*-precision! The purpose of this precision is to give machinery greater capacity and greater performance and *greater* service life! With husky Hyatt Roller Bearings carrying the loads you can keep your machines...and your war production... steadily on the go!

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SERVE SILENTLY,
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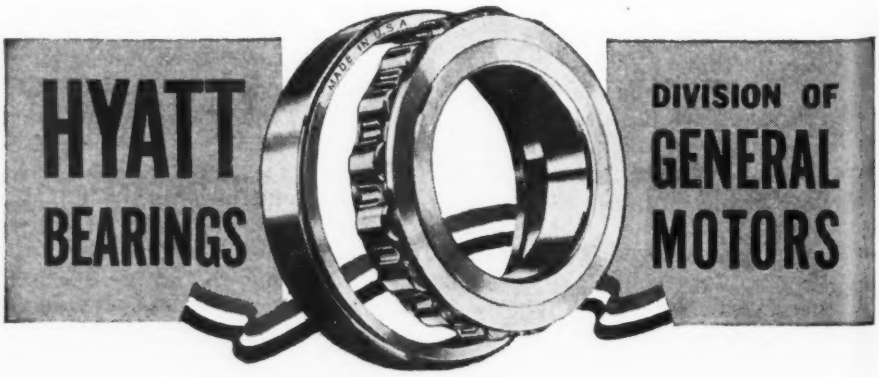

HYATT BEARINGS DIVISION · GENERAL MOTORS CORPORATION · HARRISON, NEW JERSEY

Institute of TEXTILE TECHNOLOGY Incorporated and Located

HIGHLIGHTS: Charlottesville, Va., Chosen as Site—Devoted to Research and Education—Only Fifteen Students to Be Admitted Each Year—Officers Chosen.

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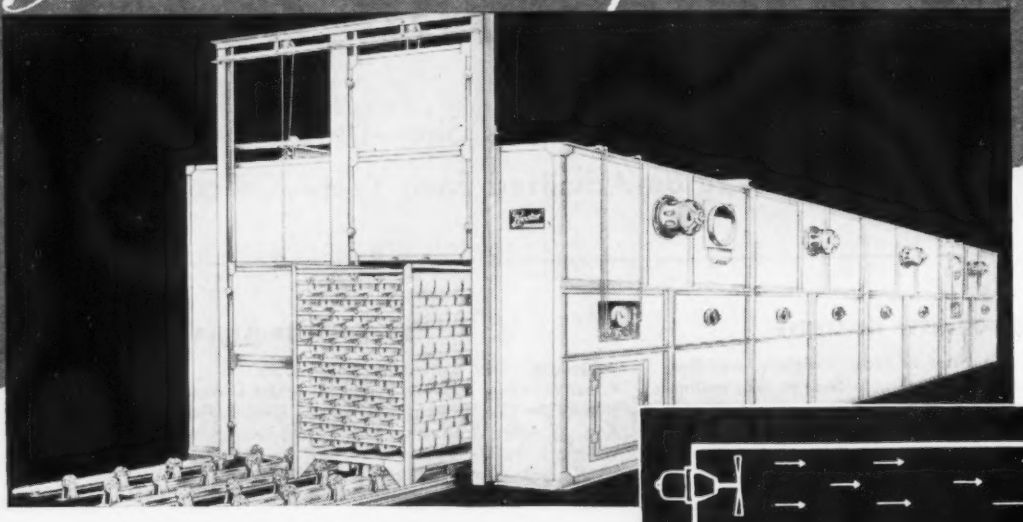
CULMINATING SEVERAL YEARS OF planning by a group of textile executives, headed by Fuller E. Callaway, Jr., Callaway Mills, La Grange, Ga., the Institute of Textile Technology began its formal existence as a Virginia corporation at Charlottesville on April 6. According to Ward Delaney, president of the new institute, it is a not-for-profit corporation, dealing in research and education, "of, by, and for the cotton-textile industry."

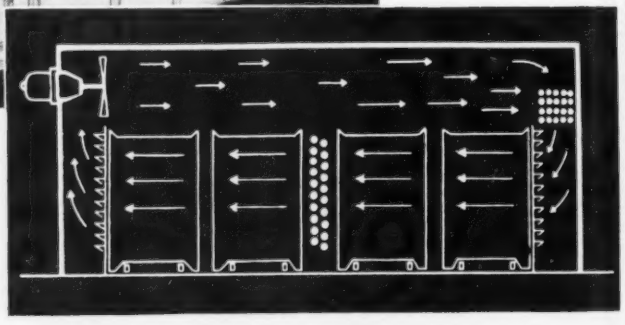
In an address before the ACMA in Atlanta last month, Mr. Delaney, who was formerly assistant to the executive director of the Institute of Paper Chemistry, explained the principles on which the new venture is based as follows: "It is definitely accepted by those who know that unless consistent application to the subject of education in the higher fields of science is carried on, and unless there is a continuous flow of properly chosen minds through an institution such as ours, research in any field will stagnate, which means that new formulas and new products will cease to develop."

The institute will accept each year only fifteen students, who must all be high-ranking science graduates of universities, and there will be a ratio of one teacher to two students. In addition to physics, chemistry, metallurgical, and mechanical laboratories and application plants, the institute will have a complete textile library, and will issue to its members a monthly abstract of articles appearing in textile periodicals. A quarterly research bulletin and various special reports will also be received by members, and they will be invited to technical conferences. Specific research enterprises will be undertaken for members on a cost-plus basis, and manufacturers of textile-mill supplies and equipment may arrange to use the facilities, with the understanding that member mills receive first benefit of such research.

According to Mr. Delaney, a staff is being assembled of men of experience and reputation in the field of textile technology. These men will devote much of their time to fundamental and applied research for the industry. Aside from specialists in the fields of physics, colloid chemistry, microscopy, and so on, the staff will be made up of "men who have earned their living in the industry and can do successfully those things that they are trying to train men to do."

A new application for a proven machine





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RAYON-IN-CAKES

For controlling the quality of rayon during its manufacture, Proctor & Schwartz research engineers some time ago developed and perfected the Proctor Dryer for Rayon in Cakes. This machine now has a record of proven performance in the rayon manufacturing industry. However, recently, a new application has developed for this machine. It has been found that by use of this dryer, throwing mills handling rayon can eliminate the difficulties encountered in former methods of processing rayon. By handling the rayon in the form of cakes and employing this dryer, throwing mills are able to control drying, improve the ultimate quality of the product and subsequently increase profits.

Careful control and correct application of air-circulation plus accurate temperature control contribute to this machine's superiority. Dryer may be designed to suit any rayon of heavy or light denier—and to meet any production requirements.

NOW IS THE TIME

Even if restrictions prevent you from installing new machinery today, it is certainly none too soon to give careful consideration to your postwar equipment needs. It will pay you to investigate the benefits you'll enjoy from the use of this machine in your mill.

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Textile Men Want OPA, BUT CHANGED

HIGHLIGHTS: Price Control Act, Expiring June 30, Likely to Be Extended—Industry Wants Promptness in Adjustments and Abandonment of Overall-Profit Theory.

By GLADYS MONTGOMERY

Washington Editor, TEXTILE WORLD

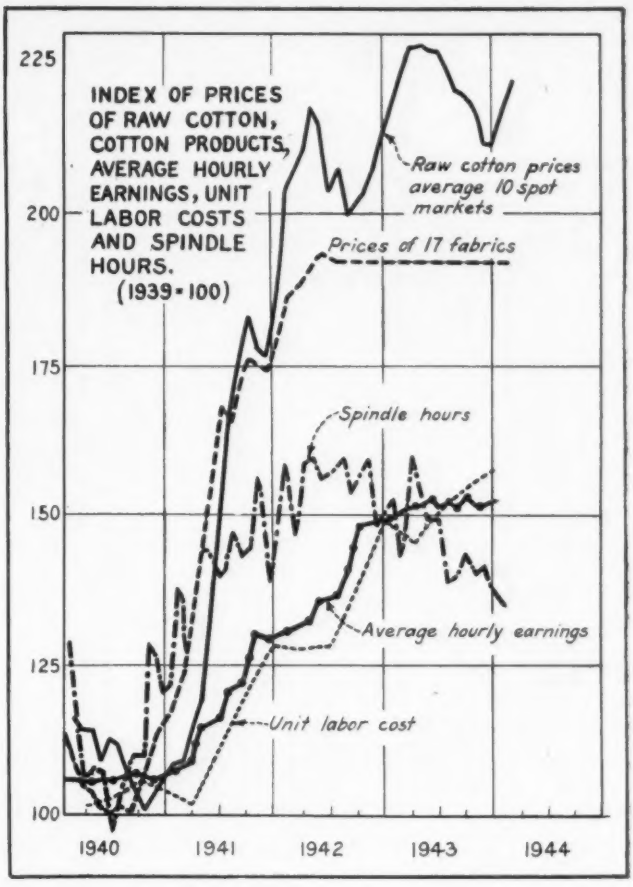

Chart Used by Dr. C. T. Murchison in His Testimony Before Senate Banking and Currency Committee

THERE IS LITTLE DOUBT in Washington at this time that the Emergency Price Control Act of 1943, which is the authorization for the Office of Price Administration and which is due to expire on June 30, will be extended at least for another year. Business interests, including the textile industry, have made it clear in testimony before Congressional committees that they favor re-enactment of the Act, in this respect making common cause with labor groups for continuation of the principle of price control as a wartime measure.

When it comes, however, to the type of act that Congress should pass, business and labor are far apart. While business generally wants an overhauling of the control structure, labor is urging the continuation of the Act in its present form and is giving all-out support to the Administration in its fight against weakening amendments. Since the Act is due to expire on June 30, there is little time for extensive debate or controversy. With political conventions just ahead and a national election in the offing, Congress is not disposed to pass a bill weakened to the extent that it would bring a Presidential veto. These factors definitely point to minor, rather than major, amendments.

The textile industry has come out four-square in favor of amendments. It wants an act that can be administered in such a way that prompt adjustment of inequitable price schedules will be all but obligatory. It wants an act which would require OPA to abandon the overall-profit theory and permit each item to stand by itself from the standpoint of costs and profits. It is on these two pivotal joints that the industry has differed most widely from the practice and thinking of OPA in the past.

MURCHISON. As OPA-industry conflict has mainly centered on the pricing of cotton items, major interest attaches to the testimony of Dr. C. T. Murchison, president, the Cotton-Textile Institute, before the Senate Banking and Currency Committee. Dr. Murchison gave the committee a detailed and forthright inventory of grievances and advanced several important and specific recommendations as follows: that for standard commercial goods regularly produced by numerous competitors, prices should be based on the product and should be determined on the basis of production requirements; that OPA should cease and desist from pooling arrangements and multiple pricing which resulted from special marketing arrangements and practices instituted by OPA and which were not customary in the industry; that in the future OPA should abandon the policy of cutting across contracts.

The cotton-textile industry also submitted a body of data based on experience under OPA to justify the changes that it is asking. It pointed out that the first cotton-textile price ceilings were issued in May, 1941. Since then all products of the industry have been placed under price ceilings. In the early months of price control, before the present plan was enacted, commensurate adjustments of ceiling prices were made in relation to cotton fluctuations. Between October, 1941, and May, 1942, when the price of cotton increased 22%, the industry operated under the Escalator Clause. Even when this clause was abandoned in 1942, there were few difficulties with raw-cotton prices, because the ceiling prices were based on March 30, 1942. Other favorable factors at that time were the abundant supply of experienced labor and a marked increase in machinery activity. Also in 1941–42, the industry profited by inventory values, induced by the rise of raw-cotton prices.

However, in 1943, the committee was told that most of the favorable factors had diminished or disappeared. Beginning in January, 1943, the price

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of raw cotton (indicated on the chart) started to rise, and by April it was approximately 6% above the price that prevailed in the preceding May. In only four of the fifteen months since January, 1943, has the monthly average price of cotton been at or below the price on which ceilings were calculated when the Escalator Clause was abandoned. Increased labor costs beginning in 1941 have continued, "with no compensating increases in ceiling prices above those which were fixed in May, 1942," except in a few recent cases. The decline in production from the 1942 record was attributed by Dr. Murchison to "unfavorable cost-price relationship for certain products, together with the tight manpower situation."

PRODUCT SHIFTS. Production losses are only a part of the story; shifts in types of products must be noted. "Squeezed between rising costs and inflexible ceilings, some mills operating under inequitable prices obtained relief by shifting wherever possible from less profitable to more profitable products." Those items most necessary to the average consumer lost most heavily, thus causing the purchaser to buy higher-priced substitutes. This situation was brought to the attention of OPA, but Dr. Murchison said that, under the administration in power, relief on unprofitable or low-profit items was denied if the mills' over-all profits were considered satisfactory by OPA. This policy led to a shift to more profitable items. "This policy," he stated, "is the basis of our belief that the Emergency Price Control law is being used not only to control prices but to control profits."

The seriousness of the situation was finally acknowledged by the Office of Economic Stabilization in its Vinson directive, a so-called measure of relief, but not regarded in this light by the industry. The industry fails to see why it should be singled out as the only one coming under the Vinson directive. Dr. Murchison analyzed for the committee the various objections of the textile industry to this directive, pointing out that, if price relief is given on an individual basis, over a period of time there will be as many prices as there are producers of that item, and that, unless subsequent processors and distributors of the item can absorb the higher individual prices, they too will be compelled to seek relief which would also be given on an individual basis.

Pooling of profits, as proposed in the Vinson directive was attacked by the industry spokesman, who said it would mean that efficient producers would be called upon to share gains with less efficient. The weighted-average-price basis would yield an even less return than the individual basis.

COTTON COSTS. Other groups have presented arguments to Congressional committees for changes in present OPA practices. Walter L. Randolph, president, Alabama Farm Bureau Federation, and William R. Blake, executive vice-president of the National Cotton Council of America (Memphis), appeared before the Senate Banking and Currency Committee. Mr. Randolph stated that the cotton-cost estimates used in arriving at the present price ceilings in a great majority of instances are below the present parity price of cotton and that cotton prices have been consistently below parity for almost a year. Senator Robert Taft (R., Ohio), a member of the committee, asked why he did not take the case to the Emergency Court of Appeals, instead of coming to the committee for relief. The reason given was that a cotton producer is not in the same category as a mill before this court. The case of one mill was delayed for over two years, which was enough to discourage cotton producers from using this court. A precise injunction in the law with reference to parity prices for cotton has been submitted to the committee.

Mr. Blake, of the National Cotton Council, re-emphasized the points made by Mr. Randolph and urged that in computing the ceiling price on each cotton-textile construction, a reasonable margin of profit should be added to the sum of the cotton-cost factor and the manufacturing-cost factor.

DEFENSE. As expected, strong defense of OPA's theory and practice of handling price ceilings was made by Chester Bowles, Price Administrator, and James F. Brownlee, Deputy Administrator for Price. Mr. Brownlee cited figures to show the tremendous increase in profits in the textile industry for 1943 over those in the period 1936–39 as proof that OPA has not attempted profit control. It is impossible, he stated, to have effective control without some effect on profits. To decide when a change in price ceilings is called for, it is necessary to take into consideration changes in profits. "This is because there is nothing in a price that I know of except two elements: cost and profit. Business would be the first to complain if price control were administered without regard to the profit situation."

VINSON FORMULA. Mr. Brownlee defended the Vinson formula. To say that this directive represents profit control overlooks two important factors, according to Brownlee:

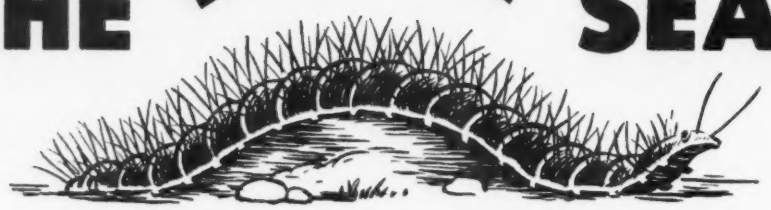
"First: In the case of a firm producing many products, the effect of applying the pricing standards of the directive to one or a few of those products is always to give that firm a higher price on that one product or those few products than it would otherwise have under our regular standards for generally fair and equitable prices. This is not control of the profits of the company.

"Second: In the case of firms producing only a single line of products, the Vinson directive would apply only to the higher-cost companies. This follows automatically from the fact that the industry earnings standard assures ceiling prices which will yield to the industry as a whole its peacetime earnings. This usually means that producers of most of the output will be receiving at least their peacetime profits. Application of the pricing standards of the Vinson directive to the higher-cost producers would probably give some of them more than their peacetime profits."

ANSWER. OPA had an answer to the critics who believe that the Administrator must authorize price increases, periodically, which are sufficient in amount to compensate an industry for any cost increases it may have incurred. "As a general principle," Brownlee stated, "the present Act forbids such cost-plus pricing, and the Emergency Court of Appeals has recognized this. OPA official opinion is that cost-plus escalator pricing removes a large part of the restraint on cost increases. Costs could then chase prices. If cost of living increases steadily, there can be no effective wage control. Such cost-plus pricing would simply blast sky-high the present precarious balance between the cost of living, wages, and farm prices."

BUSINESS INTERESTS have urged that any Federal court be permitted to hear appeals from price orders instead of limiting the right to the Emergency Court of Appeals. OPA believes that the agency would then be turned into a litigating agency instead of an operating one. Already OPA is averaging close to 500 price-enforcement cases a month.

OVER THE HIGH SEAMS



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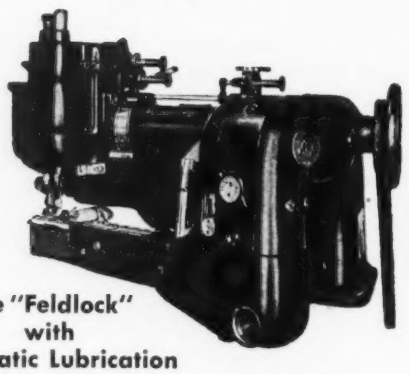

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MEETINGS OF THE MONTH

PRODUCE, Cotton Men Urged

American Cotton Manufacturers Association

Every device of management still is needed in the textile industry to increase production, which faces a serious shortage of perhaps two billion yards below 1944 requirements, Donald M. Nelson, chairman of the War Production Board, told the American Cotton Manufacturers Association in Atlanta, April 12. "In the great majority of mills," he said, "the third shift is recognized as being the least efficient, with operating costs often 10% higher per unit of output than the other two shifts. Only the local management can decide for any mill what personnel methods, what training methods, what morale-building methods will solve the third-shift problem, but I doubt whether there is any mill where something more could not be done."

Another area of effort which promises good results, according to Mr. Nelson, is worker morale. The rate of absenteeism runs from 2% in some mills to as high as 10% in others. "Personally," he said, "I place major importance on the fact that many workers have not been given a clear understanding of the importance of their jobs to their country and to the armed forces." He urged more use of posters, employee bulletins, and local newspapers, and recommended that personnel departments give more help in solving transportation problems and that they select workers by means of aptitude tests. Some mills, he declared, could also increase their mechanical efficiency, enlarge their production facilities, and make helpful changes in fabric constructions.

Major-General E. B. Gregory, Quartermaster General of the U. S. Army, also speaking before A.C.M.A., said that the Army service forces are working directly toward placing contracts which are exempt from renegotiation. "This development," he added, "is made possible by the accumulated buying experience of the Quartermaster Corps and the assembly, with the aid of industry, of adequate cost data which now provides a new foundation for satisfactory cost analysis." Some of the more rigid inspection requirements are being relaxed, he said, in order that textile manufacturers can more easily meet specifications.

In his annual message to the association as retiring president, Hugh Comer said, "We are definitely faced in our industry with the need for research machinery-wise. If the people who work in our mills are to get more money and wages comparable to highly-skilled industries, our machinery must be made to turn out more dollar volume per unit of time."

According to Mr. Comer, one of the most important questions which will face the industry "when Johnny comes marching home" is how to take care of the women, the 4-F's, and the others now in his place in the mills. His company, Mr. Comer said, is working toward the solution of this problem by preparing case histories of everyone in its plants, including those in the services, where every pertinent question is being brought out. "We hope," he concluded, "by their histories to be able to determine ahead of time, and with notice, which of our present employees are to leave first, so we can have as clear an understanding as possible with our present employees as to their rights, or the soldier's rights, to the jobs."

Formal establishment of the Institute of Textile Technology at Charlottesville, Va., on April 6, was announced by E. Ward Delaney, its president. It is a not-for-profit corporation, he said, dealing in research and education by and for the cotton-textile industry.

New officers of the A.C.M.A. elected were: president, W. Harrison Hightower, of Thomaston, Ga.; first vice-president, Stuart W. Cramer, Jr., of Cramerton, N. C.; and second vice-president Walter S. Montgomery, of Spartanburg, S. C. New board members elected were the following: A. K. Winget, Fuller E. Callaway, Jr., Harvey W. Moore, George P. Swift, George M. Wright, Joel Lanier, H. K. Hallett, Charles C. Hertwig, William H. Entwistle, and Earle M. Stall.

Hugh M. Comer (right), retiring president of the ACMA, surrenders his gavel to W. Harrison Hightower, new president of the association

Danger to Wool Textiles in FOREIGN TRADE POLICY

National Association of Wool Manufacturers

The New Deal's obsession that we should strive for a vastly increased foreign trade holds a real danger for the wool textile industry, stated Arthur Besse, president of the National Association of Wool Manufacturers at the annual meeting of that body in New York, April 25. "Foreign trade is not the cause of domestic prosperity; it is merely one of its manifestations and results," said Mr. Besse. "Nor does it promote world peace,

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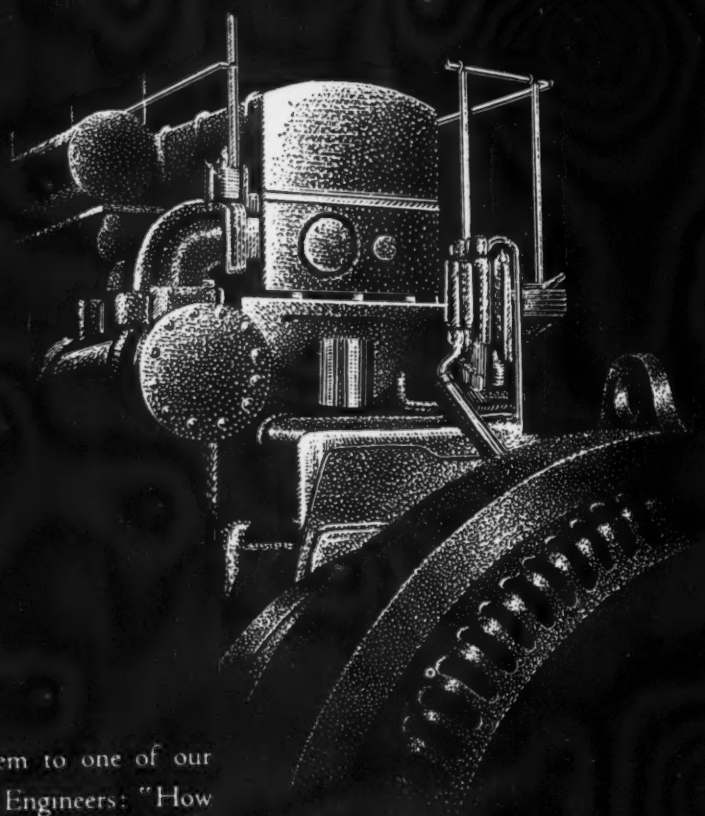

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since rivalries engendered by competition for international markets have in the past been a contributory cause, perhaps the greatest cause, of war." "We must import something," he went on, "or our exporters will not get paid for their exports. Except for war shortages, there is almost nothing this country requires which it has not been importing regularly. We literally cannot find unfilled needs which other countries might supply, thereby providing an offset for some increased exports of our own. So we go about the world with our so-called Reciprocal Trade Agreements program *inviting* other countries to suggest which of our tariff rates they would like lowered so that they can increase their imports to us! This means in short that the concept of the tariff as a means of equalizing costs of production here and abroad and as an instrument whereby we can determine the character of our own production has been abandoned. So long as the present ideas on foreign trade remain current, we have an uphill fight to protect our industry against competition from other countries.

President Besse also pointed out that in the new Army plan for contracts "not subject to renegotiation" the contracting officer has no alternative but to take costs at lowest possible level with no allowance for contingencies. Also there would no longer be the possibility as at present of offsetting a poor contract against a good one. "Renegotiation" or "pricing in retrospect" (which is perhaps a better name) is a sorry business. It does have the advantage, however, that no one is asked to return profits until after they have been actually realized. In order to obtain a contract which is not subject to renegotiation, contractors would have to assume all risks and gamble away potential profits long before they were made."

The luncheon speaker was Dr. Virgil Jordan, president of the Conference Board, New York. He considered the future of wartime business controls and whether a voluntary, free market might be expected. He found the question to be not when the controls will be removed but will they ever be removed. He recognized a sort of creeping socialization and said that unless business combats these trends it will have betrayed the cause for which the war was fought.

Arthur Besse was reelected president and the following vice presidents were named: Franklin W. Hobbs, Moses Pendleton, James F. Dewey, Ames Stevens and Arthur O. Wellman. Walter Humphreys was reelected secretary-treasurer.

Postwar Nylon Counts on HOSIERY

Annual Hosiery Industry Conference

There will be a potential nylon yarn production available on the completion of the present expansion program to supply yarn for 450 million pairs of women's hosiery, the Eighth Annual Hosiery Industry Conference, held April 20 and 21 in New York, was told. The speaker was Robert A. Ramsdell, director of sales of the Nylon Division of E. I. du Pont de Nemours & Co. This means 23,000,000 lb. of hosiery yarn per year, he said, and added that the company could deliver 18,000,000 lb. for hosiery at present and still have yarn left for other requirements were it not that all nylon capacity is of course going into military items. Mr. Ramsdell pointed out that nylon prices had been reduced until the 40 denier yarn is today at $1.90 per pound.

H. W. Rose, coordinator of research and planning, American Viscose Corp., addressing the conference, spoke optimistically on the hosiery future of high-tenacity viscose rayon, "It is conceivable," he said, "that a very fine filament, fine denier, high tenacity, tough rayon yarn might be produced after the war which will have a place in the best hose, but the price at which it could be produced and the relative value of its merits would determine whether it could be commercialized." Mr. Rose touched on the progress already made in use of rayon staple, especially in men's and children's hose, and added "the post war period should see a full development of spun rayon hose." He said that research was current to develop Vinyon into hosiery-suitable yarn.

Clarence Judd, of *Business Week*, spoke on "Fibers of the Future."

Earl Constantine, president of the National Association of Hosiery Manufacturers, arranged the program which drew the record attendance of over 600 to the two-day conference. Kroener of Textile Machine Works and Thompson of Scott & Williams spoke on the postwar machine outlook and their papers are summarized on page 97.

J. Spencer Love, director of the Textile Clothing & Leather Bureau of WPB, summarized the Governmental influences related to hosiery. He praised the hosiery industry for its war effort, but was not too optimistic over the textile situation as a whole. "I would be unrealistic" he said "if I did not tell you that the cotton yarn supply situation is today more critical than ever. . . . It worries us in Washington that there seems to be in some quarters of industry a growing impatience with Government and its controls—even in some instances a diminishing willingness to make cooperative sacrifices. There is too much of a feeling that the war is already won and why worry about controls. Yet insofar as nearly all types of textiles are concerned all our facts and figures indicate that the greatest crisis, the greatest bottleneck, is still ahead of us."

R. D. Hall, of Stowe Thread Co., pointed out that the hosiery industry was in an unfavorable position under orders L-99 and M-317 since a high percentage of spindles are frozen on weaving yarn and there are few hosiery items on which knitters may extend their ratings to the spinners for cotton yarn. He indicated, however, that the combed cotton yarn group hoped to count on the knitting industry as its best customer in postwar as it was in prewar days.

Maj. J. M. Gibbons, contracting officer of Philadelphia QM Depot, and Maj. D. C. McLeod of the same depot spoke on procurement and specifications of GI socks, respectively. The cushion-sole sock and shrink resistant wool sock were stressed.

A. D. Whiteside, president of Dun & Bradstreet and formerly director of OCR of WPB, emphasized the problems of reconversion to civilian trade and the problems of equable distribution in the early days of the postwar return to such items as nylon hosiery. He indicated a current of thought that opening markets should not be ruined by an avalanche of goods, nor hungry distributors allowed to exceed reasonable inventories.

The slate headed by John J. Kronenberg as chairman of the board of NAHM was reelected at the annual meeting of that body.

UNITY OF ACTION Strengthens Rayon Weavers

National Federation of Textiles

At the 71st annual meeting of The National Federation of Textiles, Inc. held April 25 at its headquarters in New York, William G. Lord of Galey & Lord, Inc. was re-elected president. Otis Stanton of the Hathaway Mfg. Co. was again chosen vice president.

New members of the board of directors are John J. Goldsmith, of Hess, Goldsmith & Co., Inc. and W. Oakman Hay of Wellington Sears Co.

President Lord's annual message to the members emphasized the unity of

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action that has characterized the rayon weaving industry's approach to its problems during the last two years, as evidenced by their participation in Federation activity. He expressed the hope that this experience would be an incentive to approach post-war problems in the same manner. The widely representative make-up of the Federation's membership geographically, by size and by type of mill was stressed by Mr. Lord as lending strength to its activities.

Irene Blunt, re-elected secretary and treasurer of the Federation, presented the secretary's annual report, featuring the cooperative work done by the Federation's members in connection with regulations of OPA and WPB; and the active informational service maintained by the Federation staff, in the form of the News Bulletin, of which 54 issues appeared in 1943, covering 357 items.

Review Progress and PLAN AHEAD

Alabama Cotton Manufacturers Association

Keynoting his address to the Alabama Cotton Manufacturers Association at Birmingham, president George S. Elliott told the assembly that if the great number of Government regulations continue it will definitely mean the slowing down and final stopping of the textile industry. Governor Chauncey Sparks of Alabama painted a bright future for the South and for Alabama, but emphasized that it was a job best done with local capital and enterprise.

Research is ready to be launched in Alabama, according to Thomas W. Martin, chairman of the board of directors of the Alabama Research Institute, who reported that sufficient funds were now available to begin organization of a staff to conduct research. This organization is to be patterned after the Mellon Institute, of Pittsburg, Pa., and is industry-wide in Alabama.

At the luncheon, trophies donated by Hugh M. Comer, of Avondale Mills, for the best safety record in two classifications of mills—viz., (1) cotton spinning and weaving mills, and (2) spinning mills—were presented to B. C. Russell, of Russell Mfg. Co. Alexander City, and Waldo Emerson, of Adelaide Mills, Anniston. The presentations were made by Clyde C. Sellers, liaison officer, State Department of Industrial Relations, Montgomery.

Activities of the Alabama Textile Operating Executives Division were outlined by H. M. Johnson, in the absence of Fred F. Phillips, chairman of the division. While meetings are not being held during the war, the executive committee is keeping interest alive by "meetings-by-mail", gathering questions from the membership, selecting those of general interest, submitting them for answer to the members, and distributing the summarized answers to the membership.

Ralph Thompson of the National Cotton Council told the assembly of the research work being conducted at Southern Methodist University relative to the development of strains of cotton for particular end-uses.

The resolutions committee, headed by H. M. McKelvie, expressed continued support of the war effort; called for a clarification of restrictions on corn starch and asked that some provision be made for the starch needed by the textile industry; asked that the simplification procedures used for the tax structure be extended to all branches of Government; and praised the textile worker for his contributions to the war effort both in the mill and in the Armed Services.

George S. Elliott, of Dallas Mfg. Co., Huntsville, was elected to a full term as president, having served for the unexpired term of the late G. H. Moore, of Geneva. Other officers elected were: vice-president, Comer Jennings, Cowikee Mills, Eufaula; treasurer, Homer Carter, Pepperell Mills, Opelika; and E. C. Langham re-elected secretary.

Local TESTING SERVICES Described

Gaston County Division of S.T.A.

The Gaston County Division of the Southern Textile Association gathered in Gastonia Friday night, April 21st. to hear John T. Wigington of Clemson, S. C., director of technical service of the Cotton Textile Institute, outline some of the research activities now current stressing the facilities of the laboratory of the U. S. Dept. of Agriculture at Clemson.

G. H. Dunlap and Elliott B. Grover, of the North Carolina State College, outlined some of the work now under way at the college for the mills of the State.

Marshall Dilling, executive secretary of the S.T.A., asked about the possibilities of developing a one-variety cotton, and Mr. Wigington replied that the attempt was being made to develop better strains of cotton and that a good variety of cotton was good in any locality in which it might be placed, just as good cattle reproduces good stock in North Carolina or Texas.

In the discussion of settings for cotton in the mill it was suggested that a good way to be sure that the settings are practical is to measure the staple length from the card sliver rather than to use the classer's staple, because the staple from the card sliver was longer and the allowances added to this staple length gave more assurance that the setting would give good yarn. By counting the cockles made by the frame for several jerks of the starter handle, it could be determined if the rolls should have wider settings.

Officers for the Gastonia Division elected for the coming year were the following: Chairman, H. Gilmore Winget, of Textiles Inc., Gastonia, and vice-chairman, S. M. Cauble of Trenton Cotton Mills, Gastonia.

School Deans Discuss POSTWAR TRAINING

National Council of Textile School Deans

The National Council of Textile School Deans held its annual conference at Asheville, N. C., April 20 to 22 with officials of the Textile Foundation and Government and industry officials. Particular consideration was given to postwar training programs in textile schools to fit students to take over supervisory and executive jobs and to fit the needs of returning servicemen. E. W. Camp, dean of the Dept. of Textile Engineering, Alabama Polytechnic Institute, was elected president of the Council to succeed C. H. Eames, president of the Lowell Textile Institute. W. D. Fales, dean of the Textile School, Rhode Island School of Design, was elected vice president of the council.

Also discussed was the training of textile students in subjects to supplement their technical instruction and give them a broader understanding of problems connected with their jobs. These subjects include economics, marketing and history.

Planning post-war courses so that students may receive necessary training in a shorter time was considered. It was decided that the council will set up a list of various jobs available to young men and returning servicemen in order to inform them regarding jobs available, and to plan a more definite program of training for specialized fields in industry.

Dr. McKee Fisk, supervisor of training in business in the vocational rehabilitation service of the Veterans' Bureau, discussed training programs which will be provided by the Government for returning servicemen, and George Jacquet, of WMC, discussed training programs within industry.

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Loomfixers' MANUAL

WOOL SECTION—Chapter XVII (Continued)

PICKING MOTIONS———By Eugene P. Schremp

LATEST TYPE LOOMS are equipped with an adjustable bottom shaft gear which makes the lifting of the crankshaft unnecessary when changing the timing. Moving the picker roll or changing the position of the top or bottom shaft is the only method of varying the timing without changing the sweep. This adjustment is only made when the sweep is correct but the timing is not.

Any adjustment which changes the sweep will also change the timing. Briefly, if the sweep is lengthened the timing will be earlier. If the sweep is shortened, the timing will be later. Sweep can be changed by moving the picker stick stud in the slot of the rocker iron, by moving the picker shoe backward or forward, or by lengthening or shortening the sweep stick. Changing the position of these parts will also change the time of the pick.

Power or speed of the pick is controlled by raising or lowering the sweep stick by means of a power adjuster. A power adjuster used on the latest looms is illustrated in Fig. W37, January issue. Raising the lug strap will decrease the power and speed of the shuttle. Lowering the lug strap will increase the speed and power of the shuttle.

It is always advisable to run the loom with the lug strap adjusted so that it is about 1 in. above the point where it is fastened to the picking arm. Increasing the sweep will also increase the power and speed of the shuttle, provided that the sweep before the change was insufficient. In some cases where there is a loss of power when the sweep is too long, moving the picker shoe forward will increase the power, but this should never be done unless all other methods of increasing the power have been tried and found wanting.

It is generally good practice to run the loom with the picking shoe as far back as possible. Picker stick and related parts will last longer when the shoe is as far back as possible.

Picking shafts sometimes twist and allow the picker shoe to drop out of position. When this happens the picking roll will hit only the top part of the shoe. Such action will cause a loss of power and also damage the roll and shoe. When a shaft is found to be twisted it should immediately be replaced. Picker shafts on the newer type looms are equipped with a hardened steel bushing.

When a shoe or sweep arm is being removed, it should always be withdrawn toward the front. This makes it unnecessary to remove the bushing at the rear. This bushing is pressed on firmly to prevent it from turning on the shaft. It is very important that the bushing be well lubricated at all times as there is much thrust and pressure on the back-stand bearing.

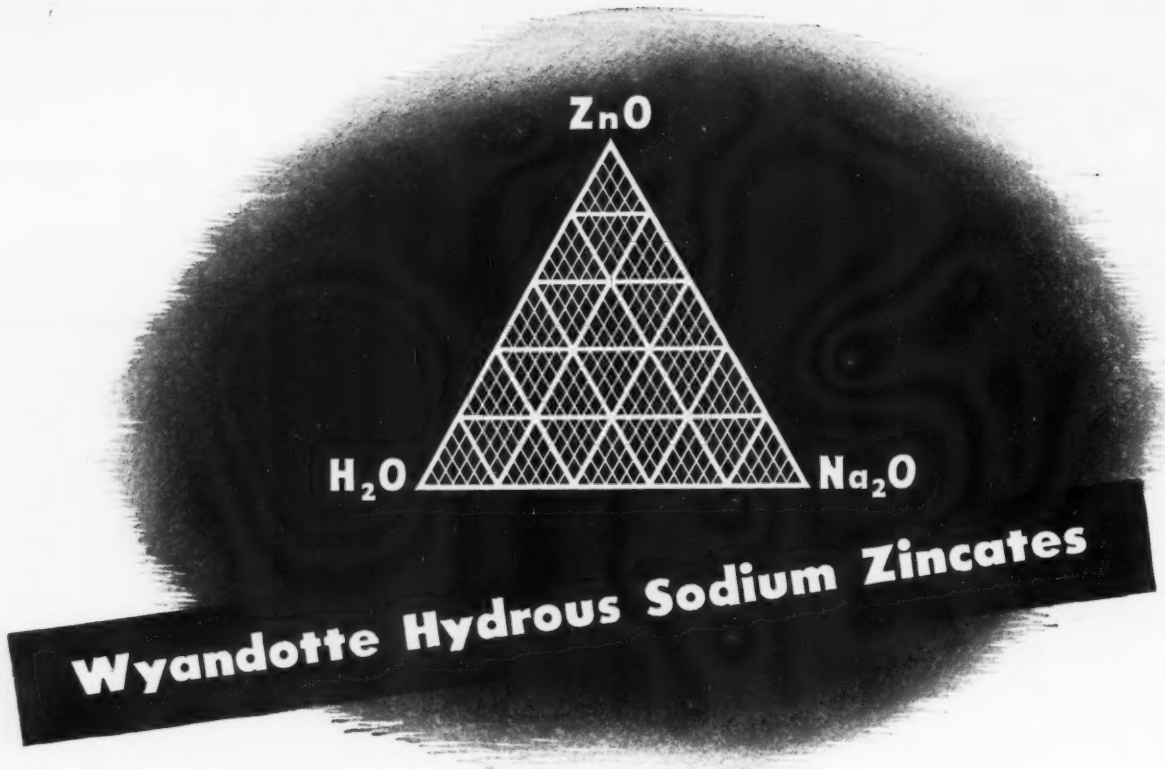
Setscrews in picking shoes and picking arms should be kept tight at all times. A loom should never be allowed to run with either of these parts loose. A loose shoe or arm will usually cause the loom to bang off, but in some cases the loom will run for some time with a loose arm or shoe. In such cases the parts may wear so that it will be impossible to hold them tight with the setscrews. When a shoe or arm is loose on the shaft, tightening the setscrews will hold it firm for only a short time. If badly worn, they should be discarded. Shoes or arms worn only slightly in the squared hole may be repaired by filing the worn sides square and then use a piece of thin steel as a shim. A piece of discarded warp beam band is suitable for this purpose. The shim should extend the full length and width of the shoe or arm. Cutting the shim longer and bending it at both ends will make it easier to install. After the shoe or arm is in place, the ends of the shim should be cut with a cold chisel. Under no circumstances should drop wires be used for this purpose.

Banging-off or slamming, as it is sometimes called, is caused by the shuttle not entering the box in time to prevent the protector motion from operating and stopping the loom.

A defective or worn picking motion is usually the cause of banging-off. When a loom that has been running normally suddenly starts to bang-off, the picking motion should be checked for broken or worn parts. Pickers, picker stick, sweep stick and lug strap should be examined. If these parts are all right, the picking shoe, picking arm and the bolt in the picking roll should be checked to see if they are loose. It is also a good practice to check the protector motion before making any adjustment on the picking motion. The time and sweep may be checked quickly by stopping the loom with the shuttle in the opposite end and turning the loom backward.

A systematic method of overhauling the picking motion should be used. The picking shaft should be examined for straightness and should move freely without end-play. This can be accomplished by adjusting the front stand. The picker shoe and arm should be checked for tightness on the shaft and if the shoe is worn badly on the top it should be replaced. If the sweep is long and the power adjuster is way down, the shoe should be moved forward ¼ to ½-in., depending on how low the power adjuster is set.

The stud that is located on the rocker iron should be as far forward as it will go if a new picker or picker stick is installed. When the stick or picker wears, the stud may be brought out to compensate for this wear. The power adjuster should be set so that the sweep stick is about one inch above level. Sweep should be checked and adjusted. Most lug straps are slotted at the end and can be moved. If the proper sweep cannot be secured by this method, a shorter or longer sweep stick must be used. Timing can be changed by moving the picker roll in the arm. When a picking motion has been properly overhauled it should run for some time with only an occasional change of position of the rocker iron stud or the power adjuster to make-up for wear that occasionally develops in the moving parts of the picking motion.



CHEMICALS WITH *U. C. P.

After years of research and development by Wyandotte, laboratory samples of the various hydrous sodium zincates are available and commercial quantities of several of the zincates can be made available for important uses. All of the hydrous sodium zincates are potentially available in large quantities. Chemicals of "undiscovered commercial potential," they have promise of immediate important commercial functions, such as:

- **Purification of water supplies.**
- **Boiler water treatment.**
- **Clarification of cannery and other industrial waste waters.**
- **Basis for colloidal suspensions of zinc oxide or zinc hydroxide.**
- **Source of zinc in zinc-plating operations.**

Wyandotte Chemicals' technical staff is always ready to talk over with you the properties and applications of hydrous sodium zincates. Users of alkalies may find it profitable to investigate the possible benefits of these chemicals in their processes.

**Undiscovered commercial potential.*

PROPERTIES OF HYDROUS SODIUM ZINCATES

CHARACTERISTICS: White to light gray or brown; flakes, granules or powder. The more alkaline zincates dissolve in water without decomposition but the less alkaline forms hydrolize to colloidal zinc hydroxide or oxide. All ratios may be dissolved without decomposition in suitable alkaline solutions. Solutions precipitate and flocculate traces of calcium, magnesium, iron and other metals from solution.

RANGE OF COMPOSITIONS: Na_2O: ZnO ratios from 100:1 to 2:1. Combined water content approximately ¼ zinc oxide content by weight.

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WYANDOTTE, MICHIGAN **OFFICES IN PRINCIPAL CITIES**

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FIXING Hosiery MACHINES

CIRCULAR MACHINES—Chapter XIX (Cont.)

NEEDLE REVERSE PLATING———By Julian W. Hughes

FREQUENTLY it is desired to knit a reverse plated pattern throughout the high splice and the double sole. Again, it may be desired to knit the reverse plating only in the leg and upper half of the foot, leaving the high splice and double sole to be knitted plain. Instructions for changing the pattern set-up are as follows:

Referring to Fig. C56, to make an all-around pattern through the high splice and the double sole, the cams 48324 and 48325 are attached to the pattern-drum cam 47982, as shown. If it is desired to knit a sock with regular plating in the high splice and the double sole to provide more resistance to wear at this portion of the foot, as is often the case when rayon is reinforced with mercerized cotton, the cams 48324 and 48325 are removed from the pattern-drum cam so as to produce the desired results in the knitted hose.

Regulating the Gore Chapter XX

THE KNITTING of the gores of circular hosiery tends to control the quality of the finished product. If gores are not knitted full, or of the right texture, the hosiery cannot be looped accurately, boarded smoothly, and may not dye evenly.

The gores, or heel and toe pockets, are knitted while the cylinder is oscillating in half-revolutions at about one-fourth its normal velocity. The needles are individually raised or lowered by picking fingers, the operation being termed picking. Correct picking is very important when regulating the gore.

The sinkers also play an important role. The sinker cap that carries the sinker cams, is not held stationary, but is allowed a small amount of play while oscillating knitting is going on. This is made possible by two dogs projecting radially from the edge of the cap which straddles a stationary post. Adjusting-screws in these projecting dogs make it possible to time the sinker cams to operate the sinkers in either direction during the knitting of the gore.

KNITTING THE GORE FULL. There are two cycles of knitting during formation of the gores; namely, narrowing and widening. The narrowing begins immediately after all the long butt needles are cammed out of knitting position and oscillation of the cylinder starts. The narrowing operation should continue to shorten the short butt needle column by one needle each course until about a third of the short butt, or operative needles, remain in knitting position. Immediately after the narrowing is completed, the widening operation begins and this is practically the reverse of narrowing.

Inasmuch as the gore is knitted at a greatly reduced cylinder speed, it is possible to increase the production of the machine somewhat by hastening this phase of the knitting cycle. This is done by taking out the links in the pattern chain that control the narrowing and widening operations. This practice is permissible when knitting low-end bundle goods when the price is the principal attraction, but for medium and high quality hosiery this practice should not be permitted. When the gores are not knitted full, the toe is more difficult to loop correctly. In this instance the hosiery will not finish well. If the gore is not knitted full, there will not be sufficient taper to fit the contour of the drying form when the hosiery is boarded. A short gore will have a tendency to pucker and dry unevenly—this is especially true of the toe.

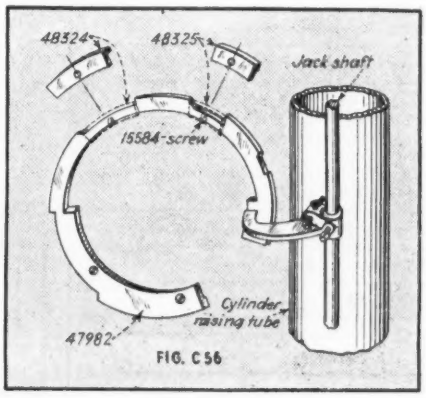
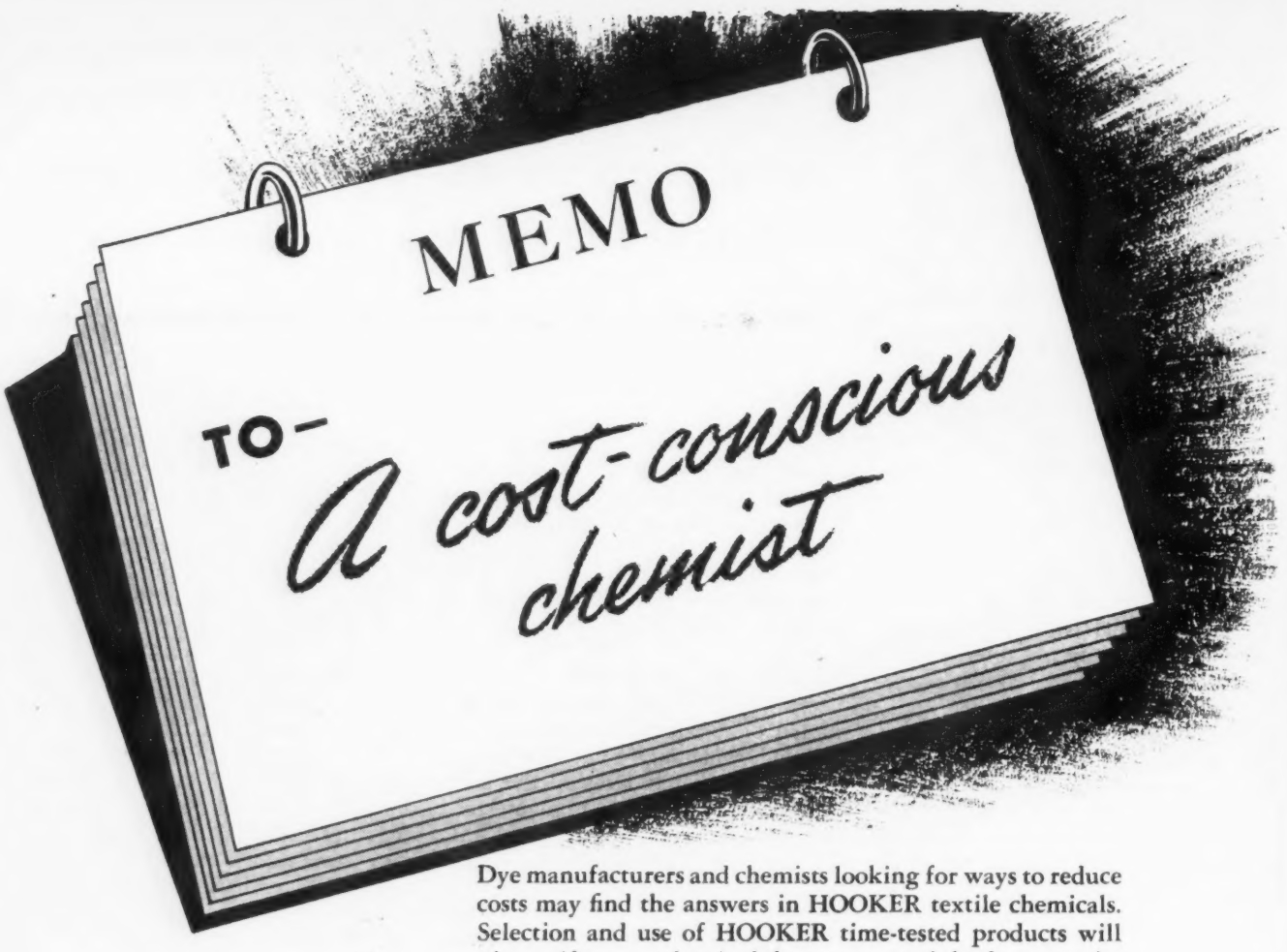


Fig. C56. Cams for controlling plating in the high splice and the double sole.

A plied yarn or a reinforcing yarn is added to the regular knitting yarn for the heel and toe of hosiery. In either case the material is heavier than the body yarn and the texture of the gore will be stiff and harsh unless the stitch is automatically adjusted to knit a longer loop.

This lengthening of the stitch is brought about by the pattern drum through its connection to the cylinder or cam block, according to the make of machine. The stitch adjustment is made by an offset screw which allows the drum to raise the cylinder slightly while knitting the gore in one case, and lowers the cam-block slightly in the other case, thus permitting the stitch cams to draw a longer loop to offset the effect of heavier yarn. Hence, it is important to see that the stitch is adjusted for proper texture whenever the yarn numbers are changed in the gores. Gores knitted too tight may not dye evenly because the dye liquor can not penetrate the fabric so well as when one of more open texture is used.

If the one-and-one method of picking is used during the widening operation the last needle to knit as the cylinder moves in one direction will be the first needle to knit when the cylinder moves in the opposite direction. In such a case, this needle will draw two loops, with the result that the gore line will be very open; a series of small holes appears where the narrowing and widening courses join. Experience has proved that by throwing one needle out of action, and then throwing two into knitting action, the gore line is smoother and less conspicuous producing a hose of superior appearance and quality.



Dye manufacturers and chemists looking for ways to reduce costs may find the answers in HOOKER textile chemicals. Selection and use of HOOKER time-tested products will give uniform results. And they may permit both economies and improvements in your *chemical* operations, often the most expensive in a mill.

HOOKER Chemicals, products of long years of experience and controlled manufacture, are used by many textile chemists with complete satisfaction. Perhaps you, too, can find new economies by using HOOKER Chemicals.

For additional information, address:

These Hooker Textile Chemicals Are Available Now

PRODUCT	USES
Aluminum Chloride (Anhydrous)	Catalyst for Friedel-Crafts synthesis, polymerization, and halogenation reactions essential to the production of dyestuffs.
Antimony Trichloride (Anhydrous)	Catalyst in organic synthesis to produce dyestuffs.
Benzoyl Chloride	To introduce benzoyl group through Friedel-Crafts synthesis in preparing dyes.
Bleaching Powder	Bleaching cotton textile.
Chlor Anisidine	Manufacture of dyes.
2:5 Dichlor Aniline	Manufacture of dye intermediates.
Meta Nitrobenzoyl Chloride	Manufacture of dyes.
Monochlorbenzene	Preparation of intermediates for sulfur black and brown dyes; other dyes.
Orthodichlorbenzene	Manufacture of dye intermediates.
Paradichlorbenzene	Manufacture of dye intermediates.
Para Nitrobenzoyl Chloride	Manufacture of dyes.
Phosgene	Manufacture of intermediates for a variety of dyes.

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CHEMICALS

Inter-Floor Handling of Hosiery at Gotham

Two separate installations of materials handling equipment at the plant of Gotham Silk Hosiery Co., Inc., Philadelphia, have facilitated the delivery of hosiery-in-process between floors and has reduced the number of operatives formerly required for handling goods-in-process.

Bags of hose are removed from a centrifugal extractor in the dye-house on the first floor and transferred to the finishing room on the third floor. A skip hoist, as shown in Fig. 1, using equipment provided by Link-Belt Co. and worked out by W. E. S. Dyer, consulting engineer, was installed running from the first to the third floor. The skip hoist runs vertically to the second floor, and then at about a 20° angle, as shown in Fig. 2, the discharge point on the third floor being 40 ft. ahead of the loading point.

The skip bucket is made of stainless steel and holds 275 lb. of hose. Advantages in using such a type of hoist with a bucket are: the entire load from an extractor can be dumped into the bucket, as shown in Fig. 1, and stockings are protected from grease and also from snagging while in transit. One operator is required at loading, and another at discharging. Operation is semi-automatic, the attendant need only press a button.

Discharging is accomplished by dumping the hose bags from the bucket into a waiting truck on the third floor, Fig. 3. The bucket is then lowered by the hoisting mechanism, located above the installation on the

Fig. 3. Stockings are dumped from the skip bucket into a waiting truck on the third floor. A steel plate separates the hoisting mechanism from the track and protects the stockings from dirt and oil. The bucket is then lowered by the hoisting mechanism for another load.

Fig. 1. A load of 275 lb. of stockings in mesh bags is dumped into a stainless steel bucket at the dye-house and raised to the third-floor finishing plant.

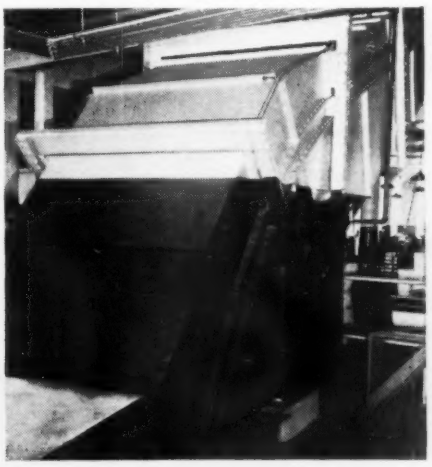


Fig. 2. The skip bucket is raised vertically from the first to the second floor and then at a 20° angle up to the third floor and to the discharge point.

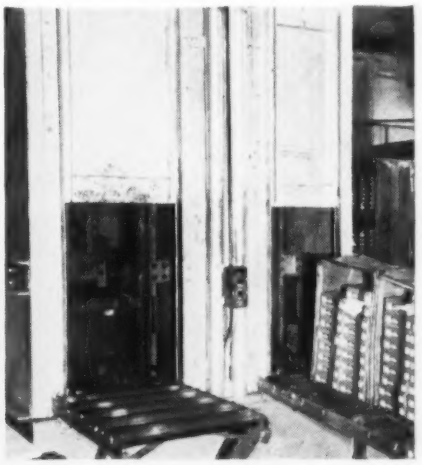


Fig. 4. Lower end of tray elevator in stockroom on first floor shows cases of boxed hose which have just been removed. Empty cases are placed in elevator shaft on the left.

All photos courtesy Link-Belt Co.

third floor so that it may be filled.

Hosiery is paired and packed on the second floor and then lowered to the first-floor stock room by a tray elevator. A filled case containing 18 to 20 boxes of hose are placed on each tray by an operator in the packing department and lowered to the first floor, Fig. 4, where another operator removes the case. Boxes are removed from the case for storage. The empty cases are placed on the return trays on the up side and returned for reuse.

Each of the two elevators consist of two strands of endless chain between the carrying trays and are centrally and pivotally suspended at suitable intervals. Chains are confined between guides in both the up and down runs and in going around the head-wheels. As many as 240 filled and 240 empty cases can be handled per hour. The chain operates at 45-ft. per min. and may be controlled from either floor.

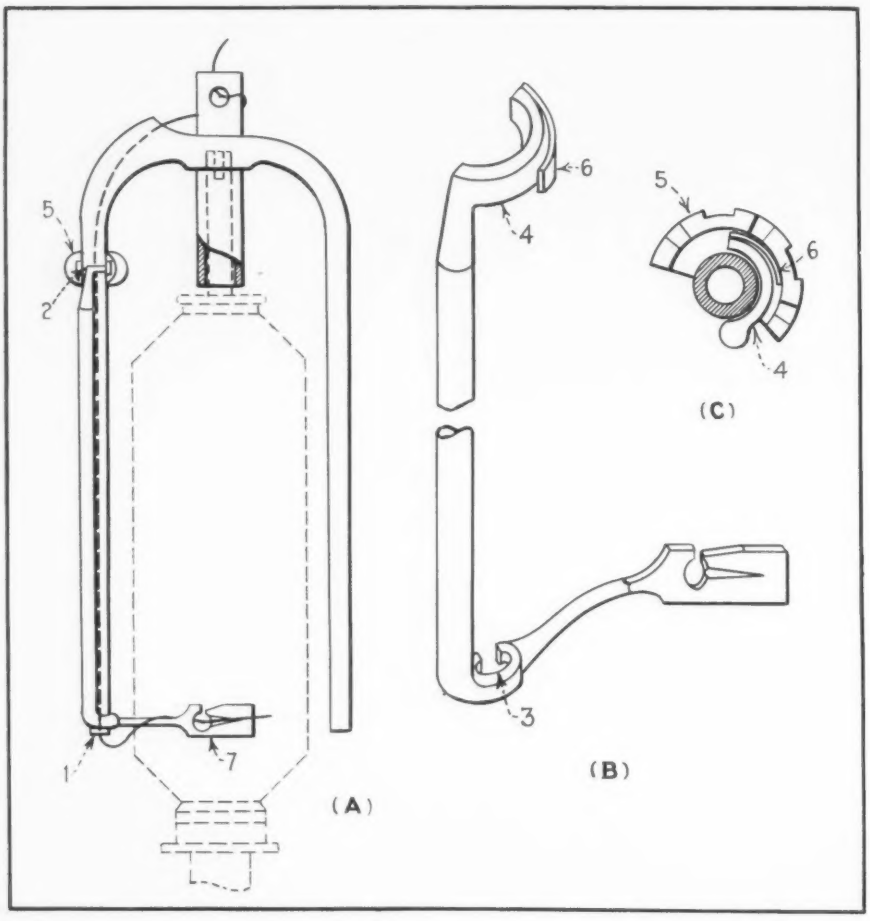
Improved Flyer Frame

Development of a flyer frame structure for roving frames which maintains uniform contact with the roving package being formed, has been announced by Thomas L. McGovern, 48 Maple St., Providence, R. I.

The construction of this flyer frame is such, so it is stated, that better control of the presser foot is maintained under the influence of centrifugal force. Hence, the presser foot will be held in close proximity to the roving being wound on the bobbin at all times. This action will result in a package of more uniform wind and with the coils evenly spaced and of high density. It is also stated that an increase in production may be obtained when using this flyer.

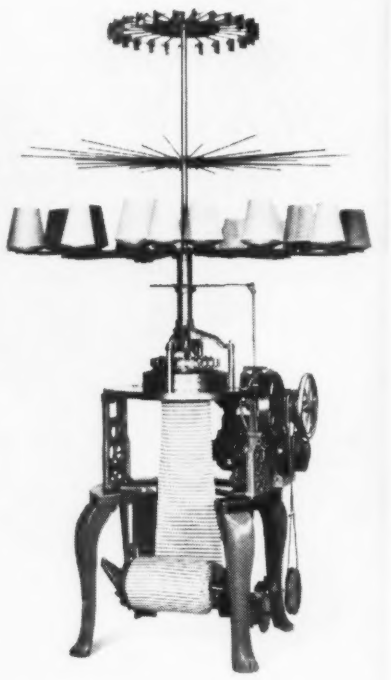
The presser arm carrying the presser foot is mounted on an arm of the flyer at points *1* and *2*, as shown in part (*A*) of Fig. 1. A bearing *3*, part (*B*), in the end of the presser arm is shaped to receive the lower portion of the flyer arm. The upper portion of the presser arm *4* is shaped in an arc so it will coincide with the surface of the flyer arm at point *2*, part (*A*), and as also illustrated in part (*C*). A housing *5* fits over the flyer arm, holding the top of the presser arm to the flyer. A flat spring *6* is placed between the outside surface of the presser arm *4* and the inside of the housing *5*. The spring *6*, pressing against the housing creates resistance to all turning movement caused by centrifugal force that tends to throw the presser foot *7*, part (*A*), outward. This resistance is such that it keeps the presser foot in contact with the package being wound at practically all times, regardless of package size.

The spring may be varied in accordance with the closeness of wind desired, thus offering a mill man a method of controlling package density at roving.



Flyer-frame structure designed to provide better control over the formation of packages at roving operations (McGovern)

Multiple-Feed Latch-Needle Knitting Machine



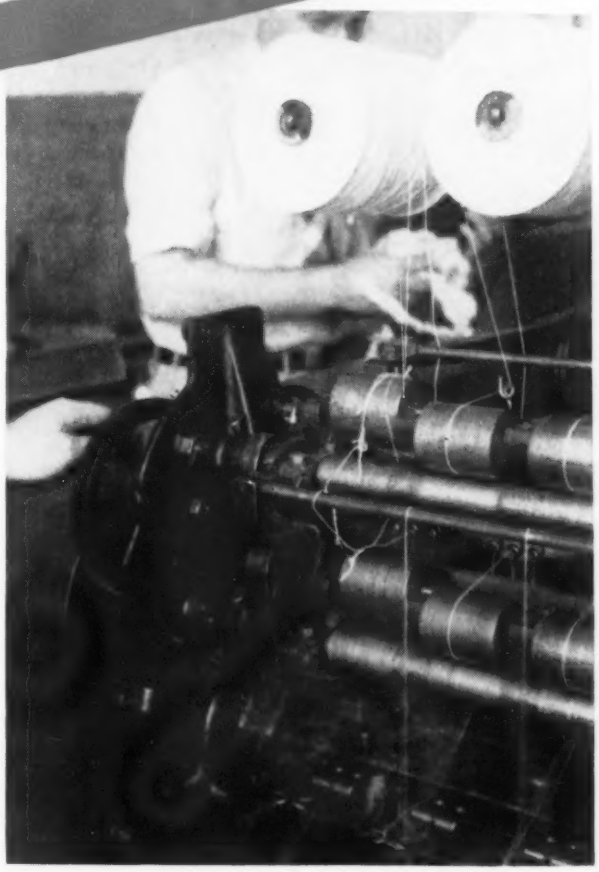
Multiple-feed latch-needle knitting machine equipped with individual motor (Tompkins)

Practically all types of knitting yarns may be used to produce a plain, a balbriggan, and jersey stitch on the new model B-15 latch needle knitting machine, recently introduced by Tompkins Bros. Co., Syracuse, N. Y.

This machine is available in all sizes in even inches ranging from 9 in. with 20 feeds, up to 24 in. with 52 feeds. Gauges start at 42 gauge, 28 needles per inch, and coarser.

Consideration has been given to easy removal of the knitted fabric, an open space being provided in the frame for this purpose. Automatic adjustment of jacks eliminates the jack-ring and jack-cam ring. An electric stop-motion will stop the machine whenever an end breaks. A new take-up is designed to provide constant tension

SPECIAL MACHINERY for SPECIAL JOBS...



Novelty yarn twister made from a conventional single roll twister. An example of a typical machinery conversion made by West Point Foundry and Machine Co.

A Fast, Economical Service

West Point Foundry & Machine has the facilities and the experience to handle any practical type of textile machinery conversion. Conversion of your present equipment offers many advantages. It enables you to use what you already have and it is decidedly more economical than new machinery. Frequently, in these days when new machinery can't be had, it provides needed equipment promptly. Let our engineers discuss this important, money-saving service with you.

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WEST POINT, GEORGIA

on the knitted fabric, producing one evenly knitted.

Individual motor drive is a feature of the model B-15 machine. A standard motor, back-geared to the machine is used. Whenever the machine stops, current is shut-off automatically.

Useful Accessories for Textile Mills

A micro-positioner for pneumatic motor valves known as the "Vernier Valvactor," has been announced by The Foxboro Co., Foxboro, Mass. This unit may be used where dependable valve response is required, and where operating conditions make the response uncertain or slow. The valve is actuated by air pressure changes as slight as the equivalent of ½ in. of water and can compel valve stem movements of as small as 1/1000 of an inch.

Hand cream to protect workers in the textile industry from skin disorders is being offered by The Cadet Creme Co., Worcester, Mass. This cream is rubbed on the hands and it protects them from stains and dyes, alkali and acid solutions, grime and other materials.

Maintenance of electric motors is an easy matter in using the industrial commutator cleaner being offered by Industrial Power and Equipment Co., 406 Millbridge St., Pittsburgh, 10, Pa. This cleaner is held in an all-wood holder and protects the fingers when cleaning commutators or collector slip rings and will remove the high resistance film from commutators and rings.

Dust prevention on floors by means of a stainless, transparent chemical floor treatment called Westone is made possible through the use of this product, being offered by West Disinfecting Co., 42-16 West St., Long Island City, N. Y. This liquid may be used on wood, cement, marble, tile, and other types of flooring and not only prevents floor wear but holds dust and prevents it from filling the air.

An industrial fluorescent fixture for high bay mounting is being offered by Sylvania Electric Products, Inc., Lighting Division, Salem, Mass. This 200-watt industrial fluorescent fixture uses two 100-watt lamps and is for individual or continuous-row mounting.

A self-priming pump incorporating an automatic control valve, has been announced by Allis-Chalmers Mfg. Co., Milwaukee, Wis. The design and operation of the valve arrangement is responsible for the quick, self-priming action of this pump. These pumps are available in sizes ranging from 1 in. to 6 in. and in capacities to 1,400 gal. per min. and up to heads of 100 ft. or over.

Electronic motor controls which give infinitely variable speed adjustment to any direct current motor from a 3 phase, a.c. line, are being offered by Electron Equipment Corp., South Pasadena, Calif. Stepless speed control may range as high as 100 to 1, and these units are available in sizes from 1 hp, to 250 hp.

A gas analyzer used for recording and determining the percentages of O_2, CO_2, CO and H_2 simultaneously and continuously recording the amounts on a single chart, is being manufactured by Cambridge Instrument Co., Grand Central Terminal, New York. A continuous record of the analysis is provided on a 10-in, strip chart, four different registrations being shown by different colors and numbers.

Photo copies of letters, blueprints, photographs, tracings, pencilled sketches, etc, may be made in any size up to 18x22 in. using the A-PE-CO photocopy equipment, being offered by American Photocopy Equipment Co., 2849 N. Clark St., Chicago 14, Ill.

A compressor control has been developed by the Johnson Corp., Three Rivers, Mich., to protect water-cooled compressors against damage caused by overheating that results if operated without cooling water.

TO KEEP 'EM RUNNING

Lighting Maintenance Schedule

Mills must make their present lighting equipment last for the duration. Frequently, the equipment is old and is not giving as many foot-candles at the operator's work as is recommended under ideal conditions. In such instances, every precaution must be taken so each light gives its maximum output if the worker is expected to keep his production at a maximum. This means that all luminaires should be inspected regularly and a system of maintenance established.

Accordingly, General Electric Co.,

Inspection Schedule for Lighting Luminaires and Floodlights

Item to Inspect	Inspection Procedure	Frequency
Reflectors	Dust and dirt. Wipe clean; replace if cracked or broken.	Each time a lamp is replaced.
Lens or globe	Dust, dirt, insects; wipe clean inside and out. Replace if cracked or broken.	
Film cutout (series units only)	If lamp has burned out, replace film cutout when relamping.	
Sockets and receptacles	Burned current-carrying parts and broken insulation. Replace if necessary.	
Gaskets	Loose, broken, or missing. Repair or replace if necessary.	
Insulators	Cracked or broken. Replace if necessary.	
Wiring	Loose or broken connections. Secure or repair if necessary.	
Mounting	Mounting supports loose, or unit displaced from normal aiming direction. Readjust and tighten securely.	
Relector, lens, or globe	Dirt, insects, or cracked or broken glassware. Wash thoroughly or replace.	At least once a year.
All metal parts	Corrosion. Replace or paint with a good weather and heat-resisting paint.	
Circuit voltage or current	Abnormally high or low voltage or current. Adjust if possible.	

A name synonymous with PROGRESS

In the last 45 years SONOCO has—(1), created jobs for several thousand workers—(2), solved major problems of packaging all types textile yarns—(3), developed modern production methods of manufacturing, all to the end of—(4), making secure and cheap the textile industry's major source of supply of paper carriers.

We have other achievements to our credit in the industrial fields, and we are efficiently serving our government through a second war.

Now we are facing the future with the confidence of diversified experience plus our records of accomplishment. We know of no better way to guarantee our continued success than by following the same fundamental policies that have *worked* in the past.

A CRITICAL NEED
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WASTE
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SONOCO MAKES *EVERYTHING* IN *PAPER CARRIERS*

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has issued the accompanying inspection schedule which should prove helpful to mills in establishing routine inspection of lighting equipment.

Handling Linen Fire Hose

This type of hose is for emergency fire protection only. It should never be used for any other purpose nor allowed to get wet except at the time of a fire. By the same token, it must be dried thoroughly immediately after use. The place of storage must be dry or else mildew and rot will quickly destroy the hose.

Care must be taken in its use to see that it is not chafed at the edges of folds or dragged over rough surfaces.

Linen hose is particularly vulnerable to absorption of acid and other corrosive chemical fumes, and it is not safe to use it in dye-houses where a high concentration of these vapors exists, according to an announcement made by United States Rubber Co. in one of their recent publications. Even tightly closed protective boxes are not enough; the only safe thing to do is use rubber covered and rubber lined hose in which the carcass fabric is protected.

Examine Used Packing

Carefully examine packing removed from a stuffing box, is a statement appearing in Good Operating Practices, a booklet offered by Johns-Manville Co., as it often gives clues to the condition of the equipment and may be the means of solving packing problems. The following clues and possible troubles were found by examining sets of packing which had seen service for some time and had then been removed to permit inspection and to provide the accompanying data:

1. **Clue:** Excessive reductions in the cross-section of the packing directly beneath the rod, shaft or plunger.

Possible trouble: Low bearings and shaft or rod riding on packing. In service early leakage occurs around the top.

2. **Clue:** Excessive reduction in the thickness of the packing directly over or either side of rod or shaft.

Possible trouble: Rod or plunger out of alignment and in the case of the rod or shaft, the bearings may be badly worn causing whipping of the shaft.

3. **Clue:** One or more rings missing from set.

Possible trouble: Bottom of stuffing box badly worn, with packing being extruded into system. Considerable difficulty, such as packing getting into the valves, traps or contaminating the fluid handled may often result.

4. **Clue:** Wear on outside diameter of the packing.

Possible trouble: Rings rotating with shaft or loose in the box.

5. **Clue:** Bulge in the side of one or more rings.

Possible trouble: Adjacent rings cut too short causing packing under pressure to be forced into the open space.

6. **Clue:** Rings next to gland followers badly deformed with bottom rings in fair condition.

Possible trouble: Improper installation of packings and excessive gland pressure used.

7. **Clue:** Packings showing tendency to sheet-out or extrude between rod or shaft and the gland follower.

Possible trouble: Excessive pressure, or more likely, too great a clearance between the rod or shaft and the gland follower.

8. **Clue:** Wearing face of rings dried and charred with rest of packing in good condition.

Possible trouble: High temperatures with lack of lubrication.

Maintenance Chart for Chain-Belt Drives

SYMPTOMS	POSSIBLE CAUSES	REMEDIES
Excessive Noise.	Misalignment. Too little or too much slack. None or improper lubrication. Loose casing or bearings. Chain or sprockets worn.	Check alignment and correct. Adjust centers for proper chain slack. Lubricate. Draw up all bolts and brace casings if necessary. Reverse* or renew if necessary.
Wear on chain sidebars and sides of teeth.	Misalignment.	Remove chain and correct alignment.
Chain climbs sprockets.	Poorly fitting sprockets. Severe overloads.	Turn chain* and sprockets over and replace if necessary. Reduce load if possible—lubricate driven machine.
Broken pins and rollers.	Chain speed too high for the pitch. Shock or suddenly applied loads.	Use chain of shorter pitch of equivalent or greater strength. Avoid shocks—easy starts give long life.
Chain clings to sprockets.	Incorrect or worn sprockets. Heavy and tacky lubricants.	Turn sprockets and chain* over and replace if necessary. Clean chain and sprockets and lubricate correctly.
Chain whip.	Long centers or high pulsating loads.	Reduce centers when possible.
Chain gets stiff.	Misalignment. Improper lubrication. Excessive overloads.	Check alignment and correct. Remove chain, clean, and relubricate. Reduce load when possible.
Broken sprocket teeth.	Obstruction—or foreign material in chain case.	Check chain clearances. Drain and clean chain case.
Cotters come out.	Vibration and centrifugal force.	Turn chains over so heads of cotters are on inside nearest shafts.

*Applies to cast or steel chain without rollers only.—Courtesy of The Chain Belt Co.

Mills using chain-belt drives will find the chart given above helpful in keeping their drives operating at peak efficiency. Greater attention must be centered on the maintenance of these belts as they are difficult to replace and breakdowns generally result in complete shutdown of the machine.

AN "ALL AMERICAN" TEAM

FOR ANY *FRENCH-DRAWING* ROOM

Interesecting Gill Boxes:—On this, the first operation of French Drawing we suggest the semi-firm Mineral Tan (chrome) apron. The leather is tanned and processed to offer minimum static electricity which keeps at a minimum the "licking up" of stock while running. The quality of this leather insures rapid "fluting in" on the rolls, elimination of stretch while running, and no "pulling in" in width. Barnes' high standard, waterproof, even splice may be had straight or diagonal. For those who prefer brown leather we furnish our Gam-Oil which is tops. Both Mineral Tan and Gam-Oil aprons available in all sizes and thicknesses.

French Drawing Frames:—You have three choices from the Barnes' line: Finisham, a soft pliable, white leather with excellent rubbing surface. Not a copy of something else, but in a class by itself. Another example of Barnes' practice to offer the mills the Best. If you prefer grooved aprons, you have your choice of Gam-Oil (semi firm) or Barnes Oak (firm). From these three aprons you can arrive at the perfect combination.

Grooves:—Our special method of grooving enables us to give you any width and depth groove needed for the work you are doing. Our spiral groove is clean cut, free from rough edges, *uniform* in width and depth throughout, and available in your specifications as to number of grooves to the inch of width.

Splices:—Our usual soft, pliable, uniform lap is waterproof and strong processed to eliminate any glazing.

Sizes: All types of Barnes' rub aprons may be had in all widths and lengths, endless or prepared for you to make endless on machine. Thicknesses vary from 2½ M/M (3/32") to 5 M/M (3/16").

BARNES PRODUCTS

Aprons for Combing, Preparing, Finishing and Drawing
FRENCH AND BRADFORD SYSTEMS
Chrome—Brown—Special Tan

Plain and Hair-On Loom Strapping

BELTING
First-Quality Center Stock Prestretched and Manufactured for Each Drive Condition Available in All Tannages

HENRY K. BARNES COMPANY • SALEM, MASSACHUSETTS

BARNES THE *Textile Leather* HOUSE

SINCE 1876

Where unusual knowledge of Leather is combined with long years of Textile experience
APRONS—BELTING • FLAT • ROUND • & ACCESSORIES—STRAPPING

Kinks AND SHORT-CUTS

A $25 WAR BOND FOR YOUR IDEA

A $25 War Bond will be awarded each month for the most useful "kink" published in this department. This contest is open to all readers of TEXTILE WORLD, and there is no limit to the number of entries any one person may make.

Contributions must be received not later than the last day of the month to be eligible for the award for the second succeeding month. Items may pertain to production methods, mill engineering, safety, cutting costs, improving quality, speeding up production; in brief, any little device, stunt, kink, or short-cut which you have tried out in your own mill and which you believe will be helpful to other mill men. Items should contain sufficient detail to permit other mill men to utilize the ideas in their own operations. Previously published material is not eligible for the award. Judges of the contest are the editors of TEXTILE WORLD.

TEXTILE WORLD shall have the right to publish any items submitted. Items which are accepted will be paid for at our regular rate for this type of matter with extra payment for appropriate sketches or photographs. The sketch you submit need not be a finished drawing.

In writing to this department, give your real name and address as evidence of good faith and to permit payment for items accepted. Your identity will not be published unless you give permission.

Contributions should be addressed to: Technical Editor, TEXTILE WORLD, 330 West 42nd St., New York 18, N. Y.

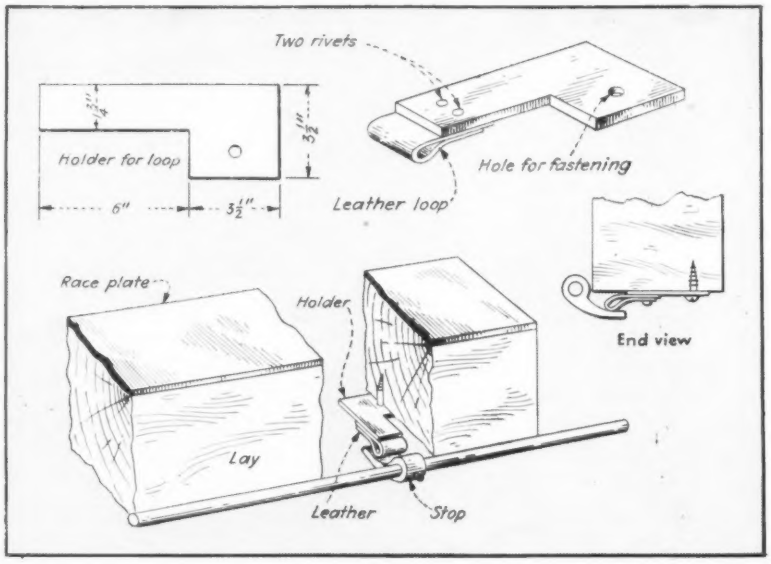
★ **THIS MONTH'S PRIZE WINNER**

Leather Loop Used to Tension Protector Rod

The piece of leather strapping shown in the sketch provides a method of tightening the protector rod in preventing filling-yarn defects such as slack picks and pebbled cloth (kinky picks). When troubled with cloth having a rough surface feeling like sandpaper, or appearing like slack picks with slugs and having other unsightly filling-wise defects, the kink shown will often stop the trouble at once.

One large textile plant has a standing rule for every loom to be equipped with this device. When warps are out, fixers inspect the device in place, and if the leather is weak it is replaced. The devices usually last from one to two years, and it is not a hard task to replace them after a section is equipped. Initial and replacement costs are low.

For best results a new piece of (*Continued on page 138*)



Drawings show how leather loop is installed to tighten the protector rod.

Method for Removing Damaged Screws or Bolts

Most fixers have had, at some time or another, difficulty in removing a screw or bolt due to the head being damaged. After trying many different methods, a satisfactory way to remove the screw or bolt seems to be to drill a hole in the damaged part and then to thread this hole partially with a left-hand tap. Into this insert a left-hand screw or bolt of the proper size and, after it jams where the threading has stopped, the screw should back out.

To do this the fixer should have a range of left-hand taps and screws to cover whatever range of screws he normally encounters. Of course, for removing left-hand screws that have damaged heads, the regular right-hand equipment can be used.

To make this job still easier, a range of special tapered taps can be bought. *(K-175)*

"Thinker"

Lithograph by Kaumagraph

Within our own organization, we will design and execute eye appealing box wraps, labels and displays to help your products get the call over the counter.

When the gang's mothers used him as the perfect scholastic example, he was quickly tagged "Thinker." "Thinker" may have been a scholar but he was also a demon basketball player, made the all-state football team, got the medal for being the best all-round athlete. "Thinker" went through school like a breeze and emerged a research chemist. Today, as the head of a textile research laboratory, he is still "Thinker."

In his present job "Thinker" recognizes the affinity which Kaumagraph Products have for textiles. He knows Kaumagraph's over 40 years research is responsible for every basic improvement in textile marking for the peak performance of Kaumagraph Products today. Kaumagraph Dry Transfers, Prestomarks, Embossed Seals and Lithography cover every need for identification, decoration and labeling for materials of every type and texture, including leather, rubber and synthetics.

For the firm establishment of your trade-name, for the introduction of your post-war products, lay your identification plans now. A Kaumagraph Identification Man is subject to your call.

KAUMAGRAPH

Identification Headquarters since 1902

KAUMAGRAPH COMPANY • WILMINGTON 99, DELAWARE • EMPIRE STATE BUILDING, NEW YORK 1, N. Y. • REPRESENTATIVES IN PRINCIPAL TEXTILE CENTERS OF THE WORLD.

KINKS & SHORT-CUTS

(Continued from page 136)

Leather Loop Used to Tension Protector Rod

(Continued from page 136)

leather should be used, cut to dimensions shown (for a S-3 or S-4 loom). On all other looms, the leather is cut according to the type of loom. Use good leather ¼ inch thick, with grain side out.

The leather is bent into a loop and fastened with two rivets. It is then bolted or screwed under the lay so the loops fits between the protector-rod stop and lay. Once in place and securely fastened, there is no danger of its falling free. The loop must be springy.

The sketch shows the placement of the leather loop under the lay, where it is fastened by a lag, or to a bolt beneath the lay, so the protector rod stop presses against it. On the S-3 and S-4 shuttle-change loom, the leather tensioning device is placed on the right hand side. On other looms it is fastened on the left or right, wherever the stop is positioned on the protector rod.

Study will show that when the rod is forced down as the shuttle goes into the boxes, the stop compresses the loop; as the shuttle comes out, the loop opens and swings the rod into correct knock-off positions.

When the shuttle enters the box, the action of compressing the loop is soft, and still requires power. This compressing action eases the shuttle into the box and serves as a checking action. If the shuttle is removed by hand (same action taking place when loom is running) the loop will open up and force the protector rod into protecting position.

Often, on a fast running loom of 180 picks, an early pick may result in a bang-off as the shuttle enters and seats because the rod bounces into a bang-off position as the lay moves forward. It will not cause this trouble when this leather device is used. On a normal bang-off, due to other reasons, the loop compresses to a slight extent and helps cushion the sudden jar.

The soft, flexible leather prevents damage of wood against steel, and prevents shock of steel against steel when applying protector-rod tension with the rod spring.

This device allows additional pick to be added without danger of kinky cloth. And what is very important, binder spring tension can often be lessened accordingly. (K-171) John L. Bove, Hazleton, Pa.

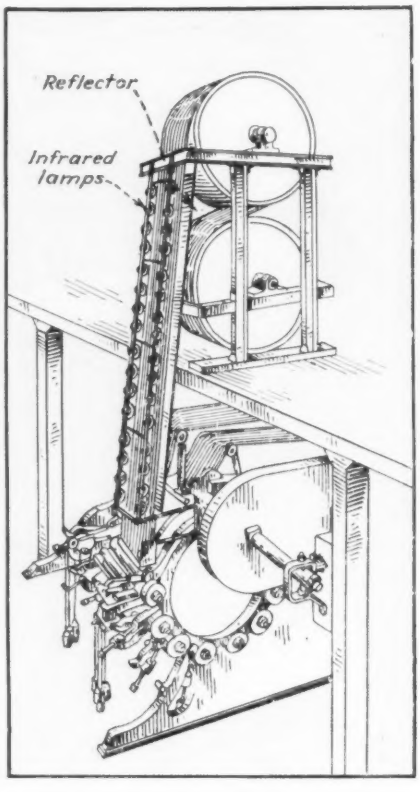
Infra-Red Reflectors Aid Printing of Rayon

When printing spun rayon cloth we found that unless the color went through the fabric, the patterns appeared murky, especially when backlighted. This we contributed to the translucence of the cloth we were printing, compared to the cotton fabrics we had previously run.

We were able to achieve the necessary penetration, but immediately ran into difficulty due to the colors marking off on the first drying cylinder, even though the contact was on the back side.

In order to overcome this, we wanted to install infra-red lamps to dry the cloth as it left the printer. It appeared that in order to do this properly we should have lamps on the back side of the cloth as this side first touched the drying cylinders. This we could not do because of space limitations, as can be seen in the sketch.

We could not consider adding any rollers to give us the necessary room as the cloth would mark off on them.

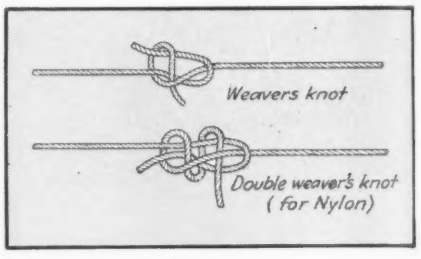


Infra-red lamps and reflectors give initial drying between printing machines and dry cans.

The kink which solved this problem was to mount the infra-red lamps on the opposite side of the cloth (the face) and to use a reflector to reflect the rays to the back side of the cloth. This not only solved our problem but also increased the effectiveness of the lamps. (K-176)

Double Weaver's Knot Recommended for Nylon

Many knots are unsatisfactory for use on nylon because they will not hold, are too bulky, or are too difficult to tie. The double knot illustrated is one that has been found satisfactory by Du Pont's Nylon Division. It is only slightly larger and more difficult to tie than the regular weaver's knot.



Double weaver's knot (for nylon).

The difference consists of an extra loop and of the position of the short ends.

The double weaver's knot has numerous other applications where the regular weaver's knot slips. There are some instances, such as when knotting some tire cords, when adhesives are necessary to hold a knot that will weave. (K-156)

Bobbin Design Helps Worsted Yarn Spinning

It is quite noticeable when spinning worsted yarn that most end breaks occur immediately after doffing, between the ring or the bottom of the cap and the empty bobbin. This is especially true when using the type of spinning bobbin shown as No. 1 in the illustration. We found that by using a bobbin of the design shown as No. 2 the number of breaks which we had following doffing, was practically eliminated.

This design often made it possible for us to eliminate the builder rack on the scaif lifter motion and thus we avoided the trouble caused by bad lifting. Our experience to date has shown that bobbins such as No. 2 will last longer, because of their design. But the greatest advantage of all

(Continued on page 140)

Why Naval officers prefer TECA*

cause Teca is relatively insensitive to heat and isture, uniforms woven with this modern fiber are re comfortable in tropical climates. They stand up ll under humid conditions because Eastman acetate yon is highly resistant to mildew . . . keep fresher ecause of fiber resilience, lively resistance to crushing nd sagging. Also, Teca's shrinkage control makes or fabrics that are easy to clean.

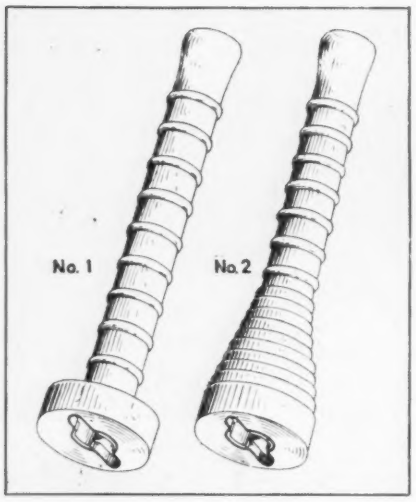
For more than a year now, Teca has served both the Navy and the Army in tropical uniforms for officers. At the same time, it has continued to develop new uses in the civilian men's wear field. For information about Teca, consult A. M. Tenney Associates, Inc., 10 East 40th Street, New York 16, sales representatives for the Tennessee Eastman Corporation, subsidiary of the Eastman Kodak Company.

• • •

***EASTMAN CRIMPED ACETATE RAYON**

KINKS & SHORT-CUTS

(Continued from page 138)



Bobbin design shown as No. 2 reduced yarn breaks.

which we found was in the winding. There less breakage occurs as the bobbins are wound off. As in spinning, most of the broken ends occur at the bottom of the bobbins where the greatest drag occurs. In addition to all the other advantages, we found, as would be expected, that our waste has been reduced since we started using the type of bobbins shown as No. 2. (K-170)

Salvaging Broken Checkstraps

A method of salvaging or rebuilding checkstraps is shown in the accompanying drawing. Most checkstraps break at one end or the other. These are saved up and two broken checkstraps are used to make a rebuilt one. The lap is always made about one-fourth of the way from one end. To make the lap, the pieces of leather are beveled with a knife and are then riveted together. We use a small hand machine for riveting, and it takes only a few minutes to assemble a checkstrap. The rebuilt checkstraps usually last about as long as new ones, but cost only a few rivets and a few minutes of time each.

It is our custom to put the rivet part toward the outside of the loom as this part of the checkstrap takes the least punishment.—(K-151)

Emery-Rubber Eraser Useful for Polishing

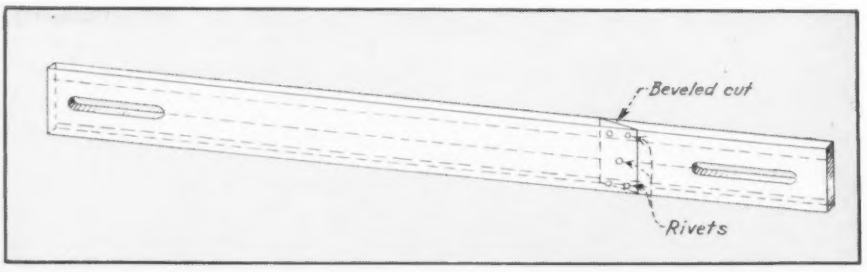
We find that an ink eraser (powdered emery in rubber) is excellent for polishing the reeds of our narrow-fabric looms. The eraser removes rust and smooths minute nicks caused by drawing-in hooks. We also obtain brilliant results by using this kind of eraser in polishing the fine lines on grain scales, steel ruler scales, copper pick glasses, and even heddles.

This emery-rubber eraser idea is not original with us, yet we were surprised at the number of persons not aware of these uses, so we pass this kink along. —(K-150)

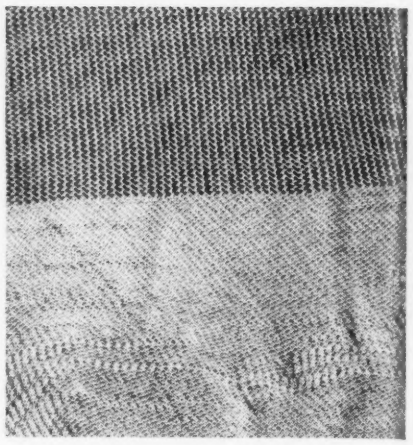
Treatment Improves Lace Hosiery Blanks

We have been manufacturing three different lace or mesh full-fashioned hosiery styles and of these three one has been giving us considerable trouble due to the leg blanks shortening in length upon removal from the knitting machine.

The attached illustration shows a leg blank, the lower part of which was knit with 100-denier viscose yarn, containing 20 turns Z, just as the yarn was received from the throwster, with no additional treatment except for conditioning. The upper part of this sample was knit from the same yarn but the cone was first dipped into a ¼% olate flakes soap solution at room temperature for 15 seconds. After dipping, this cone was left in the knitter's damp box was 48 hours to dry out to some extent and to condition itself. At the time of knitting, this yarn was considerably damper than the normal yarn run, but it was not so wet as to cause breakage during knitting.



Note position of splice in rebuilt checkstrap.



Upper part of illustration shows improvement upon pretreating rayon knitting yarn.

It is easy to see why we have difficulty both in topping and in seaming hose made from the yarn as represented by the bottom of the illustration. Hosiery knit from the treated yarn laid flat and was excellent from the standpoint of topping and seaming.

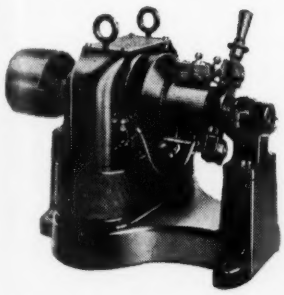
This treatment is not recommended as a general practice but was valuable to us in this instance and has proven satisfactory to date. The length of time that the yarn is immersed, and the subsequent standing prior to knitting, are important. (K-177)

Prevent Loose Picks With Filling Sizing

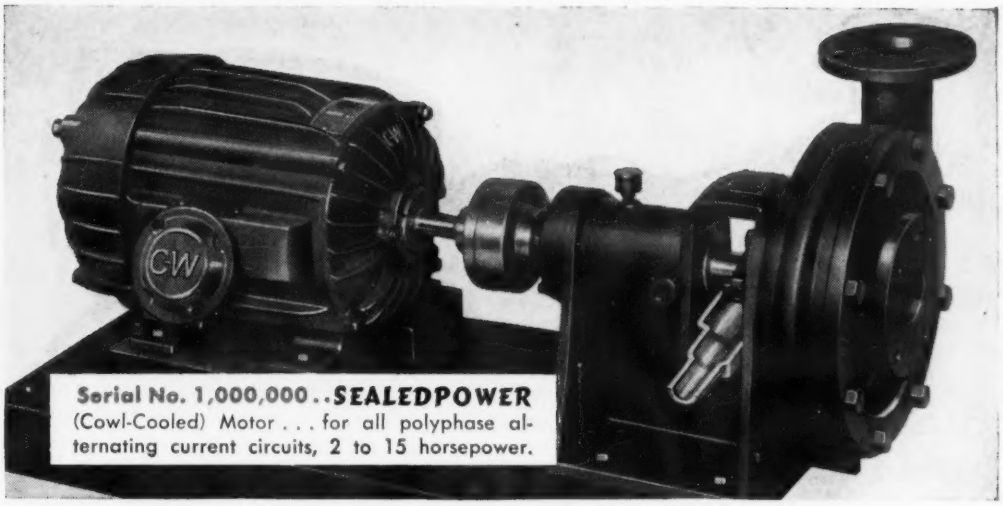
Rayon cloth is often degraded because of loose picks or kinky filling. These defects can be caused by badly-formed or improperly-wound quills, or by improper handling at the loom. If the yarn or filling winding is at fault, this can be observed by the manner in which the yarn spirals off the tip of the quills. Often this indicates improper, or lack of, conditioning. The lively yarn may also be a result of winding both S and Z twists in the same direction, on the filling winder.

No matter what the causes—and it can be seen from the foregoing partial summary that there are many—the filling can be controlled by spraying or striping the quills with a cold size. The same size employed in slashing can sometimes be used, or a special preparation for this purpose can be bought. The concentration of the size, and method of application will depend largely on the filling that is being used. For example, a much heavier size is indicated for 150-den. crepe filling than for 75-den. low-twist filling (3-5 turns).

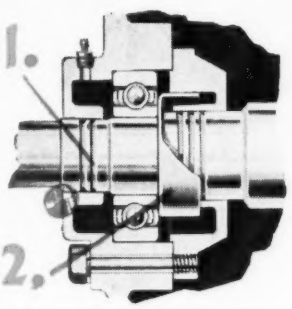
(Continued on page 142)



Serial No. 1 . . . Crocker-Wheeler Motor, built in 1888.



Serial No. 1,000,000 . . SEALEDPOWER (Cowl-Cooled) Motor . . . for all polyphase alternating current circuits, 2 to 15 horsepower.



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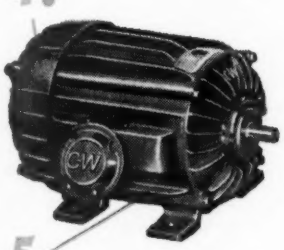

4.

5.

SEALEDPOWER

Industry's Most Trouble-Free Motor

PRODUCED BY CROCKER-WHEELER'S 56 YEARS OF EXPERIENCE

CROCKER-WHEELER FEATURES:

1. Patented "Groovseal"—no greasing needed for at least a year. Grooves minimize grease loss. This seal makes bearing maintenance expense negligible. It permits use of softer grease, for better lubrication and longer bearing life. Airtight seal prevents dust or other foreign matter from entering bearings.

2. Crocker-Wheeler's exclusive De-Sludging Impeller. Automatically desludges . . . churns and distributes grease to bearings when motor is started.

3. Vacuum Impregnation—standard on *all* Crocker-Wheeler motors. Seals out foreign matter and moisture from each individual coil . . . fills all interstices, making windings a homogeneous mass . . . reduces hot-spot temperature and lengthens insulation life. Adherence of varnish prevents vibration of wires either inside or outside of slot. (Photograph shows cross sections of baseballs, (left) after vacuum impregnation and (right) before vacuum impregnation. Note penetration of varnish to center of tightly-wound ball, making it a moisture-proof, homogeneous mass.)

SEALEDPOWER FEATURES:

4. Totally Enclosed Cowl-Cooled Construction resists corrosion. Protects against acid or alkali fumes, splashing or dripping liquids, air-borne moisture, steam, corrosive gases, conducting dusts, metallic chips, etc.

5. Fin Type Construction for non-clog ventilation and easy cleaning.

WRITE FOR LITERATURE ON THE **SEALEDPOWER** MOTOR, WHICH IS WINNING THE PREFERENCE OF MACHINERY MANUFACTURERS AS WELL AS OF MOTOR USERS, OR CALL OUR NEAREST OFFICE.

CROCKER-WHEELER Motors-Generators

JOSHUA HENDY IRON WORKS

CROCKER-WHEELER DIVISION

ESTABLISHED 1856

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Branch Offices: BOSTON • BUFFALO • CHICAGO • CINCINNATI • CLEVELAND • DETROIT • NEW YORK • PHILADELPHIA • PITTSBURGH • SAN FRANCISCO • WASHINGTON • LOS ANGELES

SQUIRREL CAGE MOTORS | WOUND ROTOR MOTORS | DIRECT CURRENT MOTORS | GENERATORS | FLEXIBLE COUPLINGS

KINKS & SHORT-CUTS

(Continued from page 140)

This filling treatment is well worth trying when loose picks or kinky filling become troublesome, but care and experimentation are needed to apply the sizing correctly. (K-88)

Handy Loss Calculator

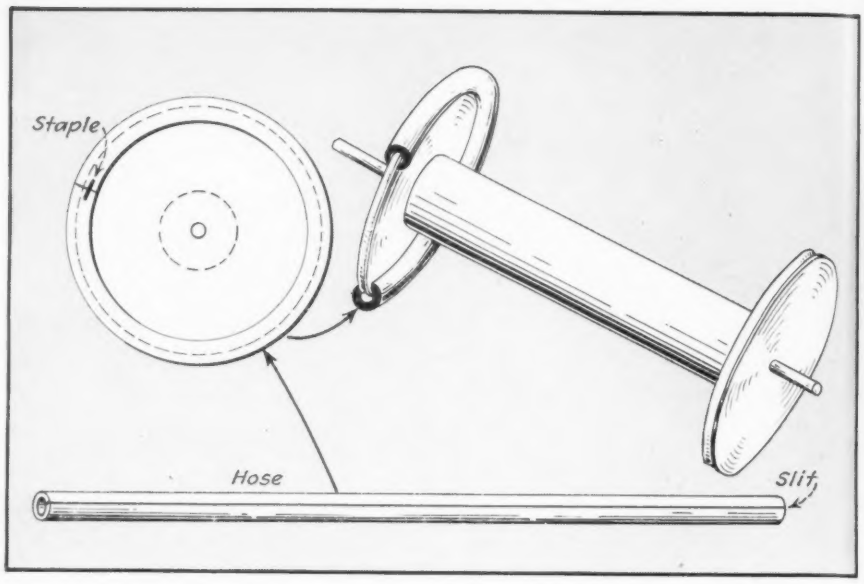
Textile mill electricians often need to know I^2R loss in wire circuits. This can quickly be determined by cutting out the circles below and assembling them to make a calculator.

Cut along the circles to make two disks and two rings. Using rubber cement mount the disks on separate pieces of cardboard. On reverse sides of a third piece of cardboard mount the two rings. Now punch the center holes and insert a small brass bolt to hold the disks in place. Washers will help to prevent wear and tear on the paper. Tighten the bolt to provide the proper pressure on the disks—they should hold their settings, yet turn easily.

The calculator solves the single phase equation:

$$\left[\frac{Kva}{Kv}\right]^2 \times 2R = W$$

Where R is resistance of 1,000 ft. of single conductor and W is watts per 1,000 ft. of circuit. The three-phase equation handled by the device is equivalent to the single phase relationship divided by two. Copper conductor is, of course, the basis of design—stranded on sizes No. 2 and larger.—V. W. Palen, *Westinghouse Electric & Mfg. Co.*

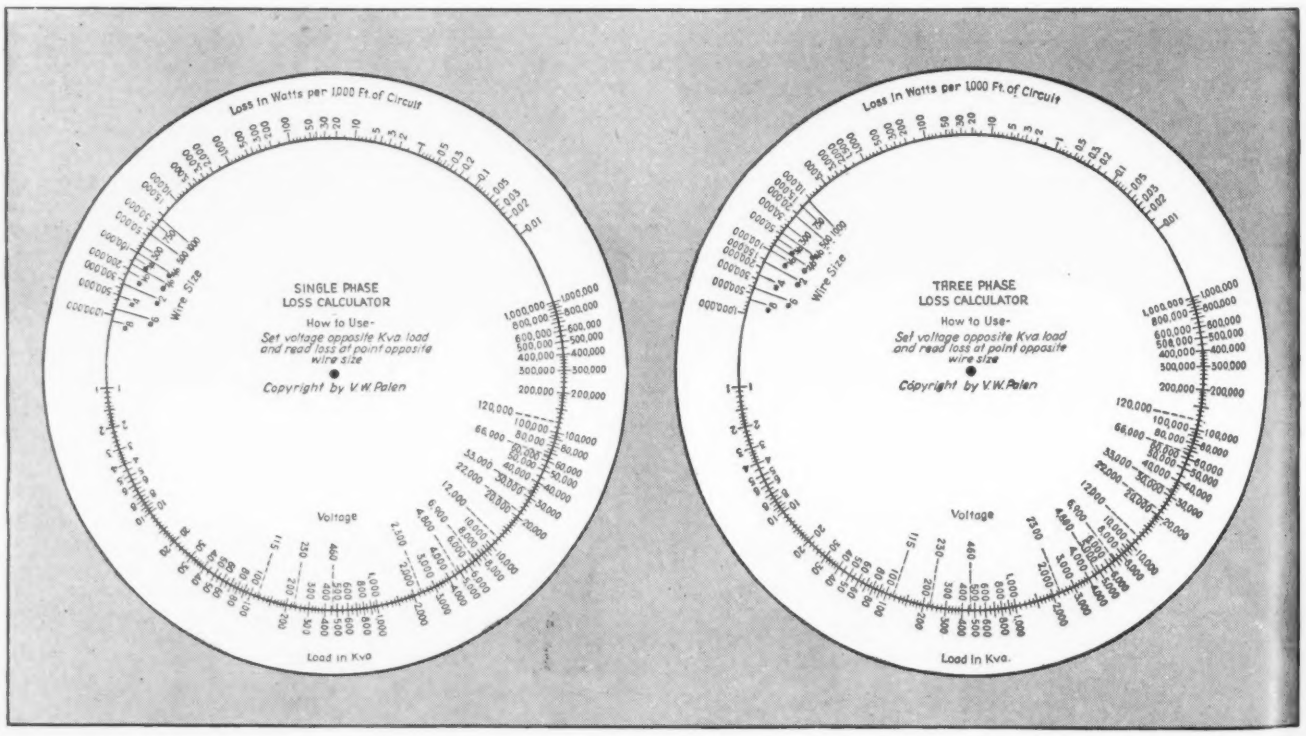


Old hose makes protective tire for beam.

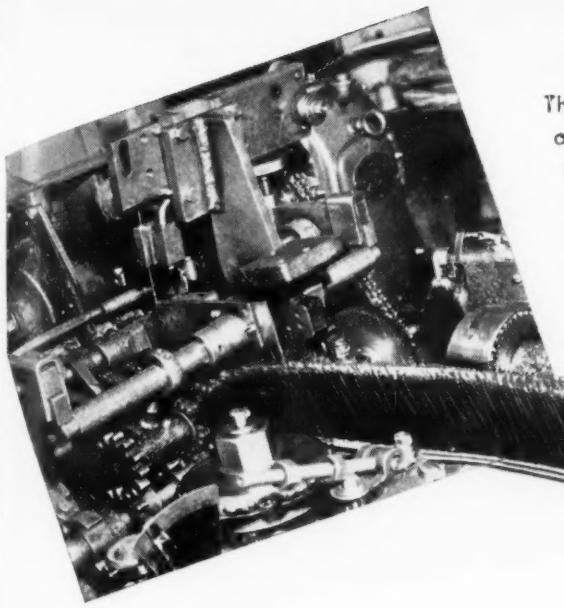
Protect Beam Edges With Old Rubber Hose

Many warp beams in use are too heavy for one person to carry and the heads can be damaged if rolled. Around the flange of each beam is a metal band for holding friction ropes. If it is not kept free from dents or other damage, proper tension is difficult to maintain. Another reason to avoid nicking the edges of the rims is that the slightest burr often will result in chafed or broken selvage ends, and may result in bad edges on the section beam that will hinder slashing.

To protect these bands, an old water hose can be cut the circumference of the beam head. The hose is then split, formed into a loop, and the sections fastened together with a belt staple. When this cover is slipped over the warp head rims, it makes a protective tire that prevents damage to the bands. (K-146)


Loss in Watts per 1000 Ft. of Circuit
SINGLE PHASE
LOSS CALCULATOR
How to Use-
Set voltage opposite Kva load and read loss at point opposite wire size
Copyright by V.W.Palen
Wire Size
Voltage
Load in Kva
Loss in Watts per 1000 Ft. of Circuit
THREE PHASE
LOSS CALCULATOR
How to Use-
Set voltage opposite Kva load and read loss at point opposite wire size
Copyright by V.W.Palen
Wire Size
Voltage
Load in Kva.

FULLERGRIPT BRUSH STRIPS
are made on a machine like this..



The brush material is centered over a ribbon of heavy-gauge metal and held in place by an anchoring wire and roll-formed into the finished shape as illustrated (1). Thus, as the bristles are doubled under the anchoring wire (hairpin style) and encased in metal under great pressure, permanency is assured.

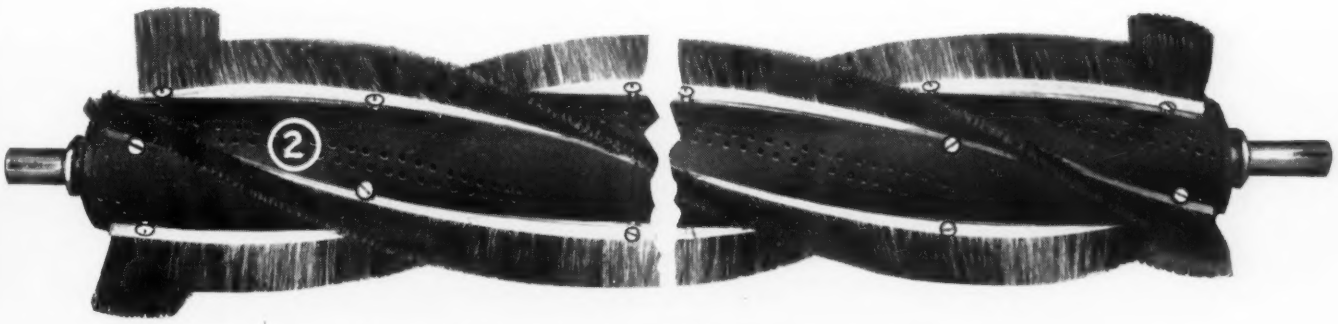
FULLERGRIPT has a solid, continuous fill of material with no gaps or spaces between the bristles, resulting in much longer life and far better cleaning.

COTTON MILLS can re-brush their FLAT CARDS *with* FULLERGRIPT BRUSH STRIPS -

which are shipped pre-formed to the correct degree of spiral (right or left hand). Your own maintenance men can easily mount them to the old brush roll.

Over 6000 Cotton Card Machines

are equipped with our brush sets and are doing a better job of cleaning card clothing.



This is how your maintenance men renew your worn-out card brushes with FULLERGRIPT STRIPS

Put worn card brush roll in lathe centers. Trim off old tufts of bristles with a sharp knife. (2) Sandpaper the roll. Apply two coats of black shellac. Drill screw holes on 8" centers and fasten the spiralled Fullergript Brush Strips with the special screws furnished with each set of strips.

EVERY WEEK some ***COTTON MILL*** in the United States installs one or more sets of ***FULLER FLAT CARD BRUSH STRIPS***

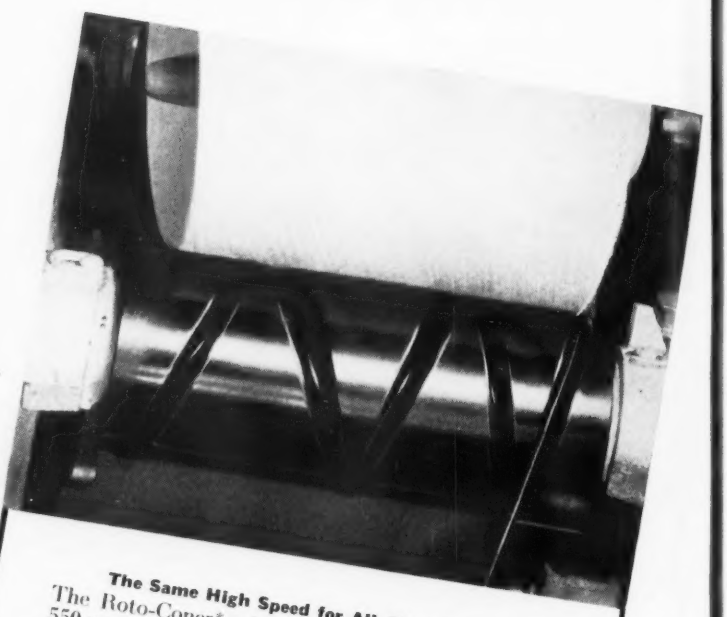
THE FULLER BRUSH COMPANY
INDUSTRIAL DIVISION, DEPT. 8C, 3594 MAIN ST., HARTFORD 2, CONN.

ROTO-CONERS* *Wind All Yarn Counts at the One Highest Winding Speed*

All Roto-Coners* equipped to wind cotton knitting yarns have *one standard* Rotary Traverse. The grooves in this roll are designed to give the one angle of wind which is best for all yarn numbers.

This is important to yarn mills because you can operate your machines at the top speed regardless of changes in yarn count. There is no slowdown of production when winding the coarser yarns, for the Rotary Traverse is designed to produce the minimum number of winds for all counts.

This uniformity is also important to knitters. There are no settings to be made in the winding machine—hence identical cones are produced from spindle to spindle.



The Same High Speed for All Yarn Counts

The Roto-Coner* winds paper cones and tubes at 550 y.p.m. Despite this high speed, maintenance does not become a problem, for the one-piece Rotary Traverse (combination driving drum and traverse guide) takes the place of many fast-wearing parts necessary in other machines. No greasing is required, and lubrication of principal parts is automatic.

The Same Characteristics in Every Package

Every Roto-Cone is produced with the minimum number of winds—under standard simple winding conditions, free from inequalities due to worn parts or faulty adjustments. Knitters can therefore expect that, yarn quality for yarn quality, yarn count for yarn count, all Roto-Cones are identical—from spindle to spindle, from shipment to shipment.

Universal Winding Company

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ROTO-CONER LEESONA

Open-Wind Cones for Knitting

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Pete & Bill

RATING EMPLOYEES

Are employee rating systems serviceable to overseers in selecting workers for promotion and in developing the most dependable help?

BILL, I'M GOING TO START A RATING SYSTEM FOR MY EMPLOYEES. I NEED TO KNOW EVERYTHING I CAN ABOUT THEIR WORK AND CHARACTER SO AS TO DEVELOP AND PROMOTE THE BEST
PETE, YOU ARE MAKING A LOT OF WORK FOR YOURSELF. THIS SYSTEM YOU SPEAK OF MEANS RECORDS AND RECORDS, AND WHEN YOU GET THEM I BET YOU WON'T USE THEM.
1
YOU KNOW, BILL, I AM GOING TO TRY IT ANYWAY. I DON'T LIKE TO DEPEND ON MY MEMORY ALONE WHEN I MAKE A PROMOTION; ESPECIALLY NOW WHEN THEY COME SO FAST.
YOU OUGHT TO KNOW HUMAN NATURE WELL ENOUGH BY NOW, PETE TO BE ABLE TO PICK OUT THOSE YOU WANT TO DEVELOP AND PROMOTE WITHOUT SUCH A LOT OF RED TAPE.
2
I PRIDE MYSELF ON KNOWING HUMAN NATURE, BILL, AND THAT IS JUST WHY I WANT TO COLLECT FACTS ABOUT PEOPLE SO MY JUDGEMENT OF THEM WILL NOT DEPEND SOLELY ON PERSONAL FEELINGS.
GO AHEAD THEN AND DO IT YOUR WAY AND LET ME KNOW HOW YOU COME OUT. I'M STICKING TO THE METHOD I'VE USED FOR 20 YEARS.. PROMOTE THOSE YOU DEPEND ON. WHAT SAY, JOE?
3
WE ARE ALL PRETTY MUCH OVERBURDENED THESE DAYS, BILL. HOWEVER PETE'S IDEA SOUNDS GOOD TO ME. I'LL BET SOME OF OUR READERS HAVE TRIED HIS METHOD. IS IT ANY GOOD, FOLKS?
4

LETTERS TO PETE & BILL are paid for when published, without regard to length. We use letters (not over 200 words) discussing material in this department or any other pertinent matter. Contributions of greater than specified length may be given consideration as articles. Suggestions for the Pete & Bill dialogue are also welcome and if used will be paid for. If these pages interest you, contribute something to them to interest others. Address PETE & BILL, Textile World, 330 West 42nd Street, New York 18, N. Y.

Letters From Readers

Train the Handicapped War Veteran

"Using Handicapped War Veterans"
(Pete & Bill, Mar., 1944)

Dear Pete & Bill:

By all means the textile industry should exert every effort in training handicapped war veterans to function as actively as possible in textile work.

From the humanitarian standpoint alone we owe to these men, whose condition is the result of risking their lives to protect ours, the hope and means of again earning a livelihood outside of the narrow confines to which such cases are too often relegated.

Let's make the necessary adjustments and expenditures, as well as allow for generous training periods, so that new and encouraging vistas may be opened up for such men beyond the prosaic and restricted limits of gatemen, night-watchmen, or routine clerkship.

From a practical angle the industry is bound to derive benefits too. We shall, through such training and provision, acquire loyal and grateful personnel, who will be more than happy to stand by the firm which gave them the opportunity of securing that essential ingredient to happy living—work, with a vital and satisfying interest. (PB-139)

No Meetings for Duration

"Technical Meetings in Wartime"
(Pete & Bill, Feb., 1944)

Dear Pete & Bill:

For the duration, I for one, will insist, most vehemently that all mechanical meetings be discontinued. I will readily admit such meetings tend to do great good and are most beneficial to the owners, the chief boss, the machine men, and the employees. But, during the awful conflict until peace comes, let us survive as best we can without the get-togethers.

When these crucial days are over we can get back to normal conditions. A better feeling of brotherly love, of cooperation, let us hope, will then manifest itself. (PB-132)

Management Must Confide in Its Foremen

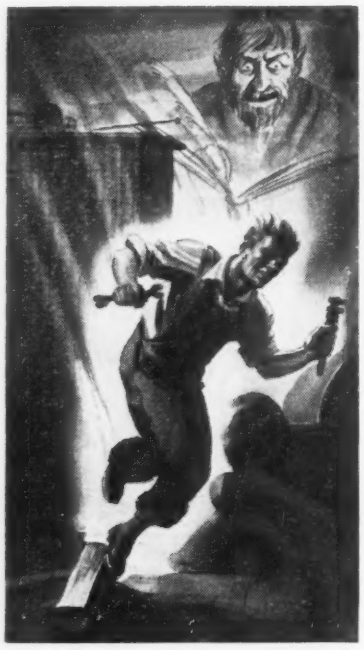
"For Better Informed Foremen"
(Pete & Bill, Jan., 1944)

Dear Pete & Bill:

A foreman is a representative of management, a bumper between management and worker, and a potential department supervisor or plant superintendent.

We expect a foreman to understand management policy, to understand the worker, and to understand the product

MEMORIES OF OLD MAN CARELESSNESS



By MARTHA B. PITTENGER

No. 17. You Aren't a Kangaroo

Birds fly because they have wings. Kangaroos jump because their hind legs are built to jump with, yours are not. Yet, lots of folks hop about like frogs, and jump like kangaroos, thinking they are saving a few steps. They may be saving the wooden steps built for their use, but they aren't saving their own footsteps, unless it's by not walking while they recover from an accident.—Like the one Bill got the day he couldn't take time to go after a ladder to fix some machinery just beyond his reach.

Bill didn't have any difficulty in getting up where he wanted to go, but the sad part about it occurred when he jumped down, throwing three or four times his weight upon his feet. I had to laugh because he didn't see a small piece of wood lying on the floor, which caused his ankle to turn, resulting in a torn ligament. He was laid up for a day or two, and had to hobble about for several more days after he was able to put his foot on the ground.

I entice my victims with this Mexican bean and kangaroo method of doing their work by making it appeal to them as a time saver. The notion to hurdle a few obstacles strikes them so suddenly that they haven't time for a sound decision. They're just following my instructions, but somehow they find it doesn't pay well. To be sure this trick doesn't often work twice on the same person.

or products of the company. The workers expect their foreman to understand their individual potential abilities and peculiarities, to give them fair play, and to know all about the job, the machines, and the product.

Therefore, when management puts a man in a foreman's position as its representative, he should be informed on everything pertaining to the product- its cost, management policies, projected views and anticipated plans, the wage-rate structure and any other related information known to management. (PB-137)

Avoid Discouragement of Workers

"Correcting Workers' Mistakes"
(Pete & Bill, Oct., 1943)

Dear Pete & Bill:

Many workers believe in riding their fellow worker when he makes a mistake. They believe it is a wise method, but only too often the fellow worker gets discouraged and argues as follows:

"What is the use of trying to learn or do this job. These men are not willing to help; they only try to make a fool of me." A week or two later it is too late to avoid the results. He looks for another job, gets one, and then tells the boss, "I quit. I cannot learn anything here."

The boss, not knowing what it is all about, is glad to get rid of him, but if the boss only tried to find out and settle what is causing the man to get discouraged maybe that man would become one of the smartest workers on that job and he would never let the man go. The workers can cause more trouble through criticizing than can any boss. It is a worker's place to show the learner, but not to ride him. (PB-136)

Safety Color Code

(*Continued from page* 81)

being visible at long distances and under rather poor lighting conditions. This is the same color as used by the Navy on life rafts and life jackets of aviators who have been forced to abandon ship. High visibility yellow is used for marking obstructions and other items, as listed in Table I.

Orange is the loudest, shoutingest color in the whole deck. It has been christened alert orange—and on this color rests the biggest burden for identifying injurious hazards about textile plants, as covered in Table I.

The next color is traditionally associated with safety. It is the color of the safety councils. It is used on physicians' emblems, on autos and is widely used by both Army and Navy for safety equipment. Uses of safety green are likewise given.

Red for fire protection needs no explanation. It has been used for this purpose before.

From the railroads has been taken the blue symbol for machinery not to be moved or operated, such as looms or card being repaired, etc. The precaution blue spot tag symbol should be used to identify such equipment or apparatus not to be used, moved or started.

Traffic white, gray or black has been used for zoning purposes. Selection of the color depends mainly on the background.

COLOR RECOGNIZED BY COLOR BLIND PERSONS. Symbols or designs are used with each color whenever reasonable. The triangle or arrow with the orange, the cross with the green, the square with the red, the disc with the blue, and yellow and black alternate striping, as shown in Table I, are of approved design.

Statistics indicate that about 4% of all males are color blind. They, in most cases cannot distinguish between red and green. In the majority of instances these two colors look alike and are dull, brownish or gray. That is one reason for the use of symbols as well as color. The color blind may not recognize the color but they can learn the meaning of the symbol. A further purpose is to make use of two impacts to get across the safety message—let the color shout the story, but that shout can be amplified if design, a shape or a symbol is associated with that color and repeats or emphasizes the same warning.

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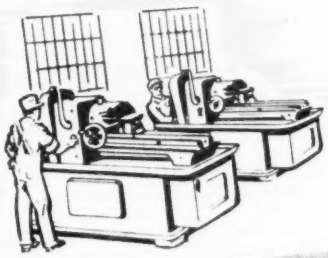
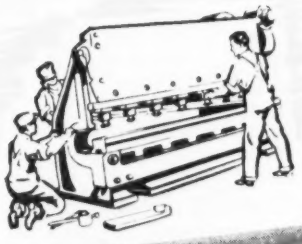


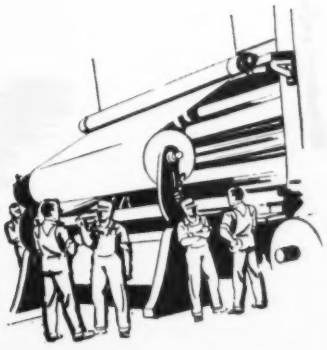
Today, with many types of equipment almost impossible to replace, conservation through proper lubrication is of prime importance. Sun's SAVE and SERVE Plan has been developed to help you make the equipment in your plant run better and last longer . . . by helping you establish a system of proper lubrication.

❷ SAVES PRODUCTIVE TIME



Every breakdown of equipment wastes productive time. Sun's SAVE and SERVE Plan helps you cut down these wasteful periods — when valuable machinery must stand idle unnecessarily — and increases the actual productive time you can expect from your equipment.

❸ SAVES LABOR



Reduce your maintenance time . . . cut your repairs and you save manpower.

Sun's SAVE and SERVE Plan will help you do both — help you make every man-hour a productive hour — by giving you a guide to correct lubrication that anyone can follow. Put Sun's SAVE and SERVE Plan to work in your plant. No charge. It's yours for the asking — includes plant poster, wall chart, lubrication manual, technical bulletins, maintenance memos. Write for folder giving complete details . . .

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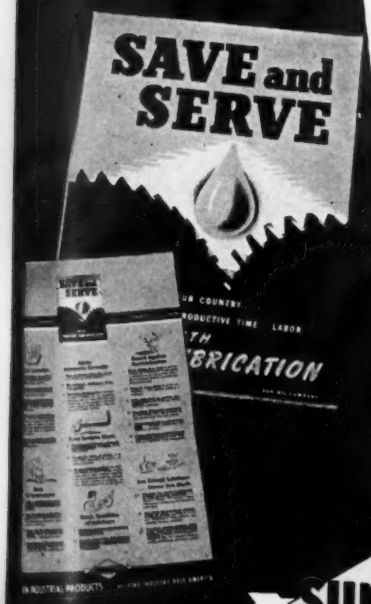

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MANUFACTURERS' BULLETINS

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1. **A review of modern English textile finishing equipment,** written by Mr. K. S. Laurie of John Dalglish & Sons of Glasgow, has been reprinted, with permission, by Calco Chemical Division, American Cyanamid Co. This paper carries an extensive discussion of drying mangles, extractors and cans, as well as stenters with various types of drives and other mechanical data. Many of the specialty machines such as the Sanforizer are covered. The article appears in Calco Technical Bulletin No. 751, entitled "Some Textile Finishing Machines."

2. **A lubrication chart** for textile machinery has been developed by **The Texas Co. to cover all parts of** textile equipment requiring lubrication. The chart shows correct ranges of types of oils and greases necessary and is printed on paper sufficiently heavy for posting in the mill. It is based on the lubrication chart which appeared in the Annual Mill Check-up Section of TEXTILE WORLD, November issue.

3. **An elastic thread made from rubber,** Firestone Contro, is discussed in a recent Firestone booklet entitled "Producing for War—Preparing for Peace." A brief description of Contro is given stating that it can be covered with silk, cotton, rayon or any other practical covering for use in materials requiring elastic thread.

4. **The Classified Directory,** 1944 edition, for the Association of Consulting Chemists and Chemical Engineers, Inc., has been published. A foreword describes the directory as a clearing house for consultants and explains how the directory can be used to obtain various services.

5. **Malleable iron belt hooks** that are currently available are listed in a folder issued by the Jewell Belt Hook Co. The folder shows the various types of hooks required for a wide range of belt and lists the price per 100 hooks. It also gives instructions for the proper use of this type of belt fastener.

6. **Single-end roving of worsted yarn** improves production and reduces waste, according to an article appearing in the April issue of *The Traveler*. The booklet compares single- and double-end roving used in running 1/40s fine wool.

7. **Lubrication for Atwood up-twisters** is included as an insert in the March issue of *Atwood Twists*, published by The Atwood Machine Co. The folder proper describes an installation of machines and also gives details of the Atwood 5B ring twister. Mention is made of the Model 10 which is used for 1-lb. packages and the Model 11 for 3-lb. packages.

8. **"Textron, Incorporated,"** is reviewed in the March issue of *Parks' Parables*. The booklet is illustrated with views showing the manufacturing of parachute canopies. Brief mention is also made of Textron shower curtains.

9. **"A New Opportunity for All Textile Men Through Research"** is the title of a new booklet issued by Textile Research Institute, Inc. The booklet is in nine sections covering the need, aims, personnel, and considerable other information in regard to the institute. An appendix lists the institute's membership and some tax information. A section of the booklet is devoted to the confusion that has arisen in the minds of textile manufacturers due to the emergence of numerous new textile research groups.

10. **Rayon and nylon textiles** occupy a considerable portion of the April-May issue of *The DuPont Magazine*. In addition, four pages are devoted to a safety color code which also appears elsewhere in this issue of TEXTILE WORLD.

11. **The welding of stainless steels** is described in detail in a 64-page booklet published by the Allegheny Ludlum Steel Corp. Colored charts and diagrams are used throughout the booklet which first describes the effects of heat on stainless steels and then discusses metallic arc welding, atomic hydrogen welding, oxygen-

(*Continued on page 176*)

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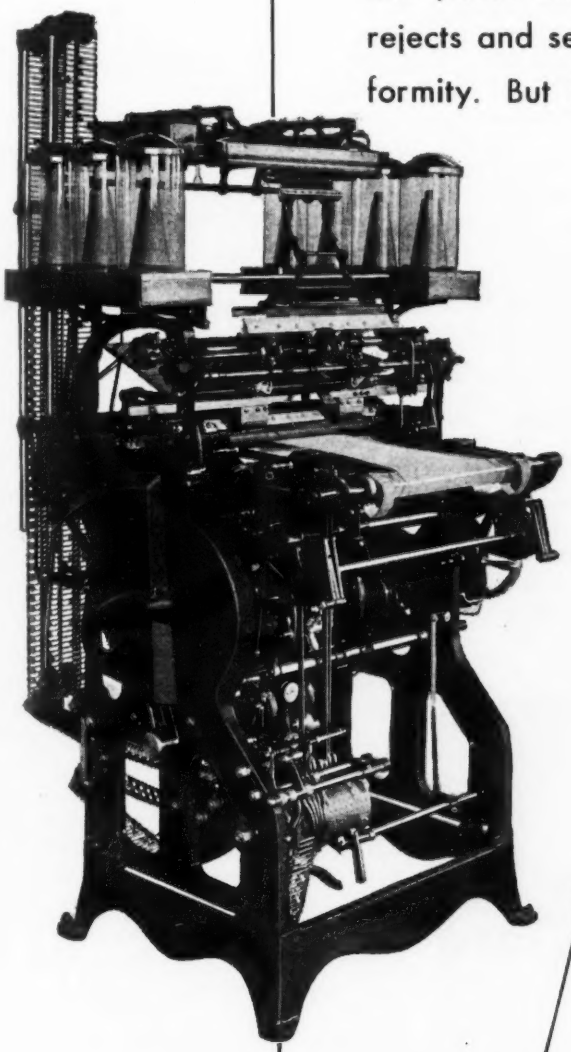
For Hosiery Mills that are LOOKING AHEAD!

. . . and every alert hosiery manufacturer is doing some post-war peering and planning. He knows that to meet the insistent demand for sheer stockings he will have to use various synthetic yarns in very fine gauges. If his mill still operates with leggers and footers this poses the very real problem of a mounting toll of rejects and seconds due to bad matching and lack of uniformity. But to the mill that enjoys the advantages of



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Single-Head, Single-Unit, Full-Fashioned

HOSIERY MACHINE*

the post-war period has no terrors because it handles the finest gauge synthetics and combinations with absolute uniformity. As for matching of legs and feet, there *is* no problem because

IT KNITS THE ENTIRE STOCKING IN ONE CONTINUOUS OPERATION

perfect in color and texture from top to toe.

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Round Table

With meetings of operating executives curtailed, there is need of a meeting place where mill men can discuss problems among themselves. The Round Table is designed to supply this need. It is open to all readers for discussion of subjects relating to mill management and operation. Bring your problems to the Round Table. Give other mill men the benefit of your experience, and get their ideas in return. Names of contributors to the Round Table will be held confidential if so requested. Sign your contribution with a pen name if you wish to preserve complete anonymity, but include your real name and address as evidence of good faith and to permit payment for items published. Address contributions to: Editor Round Table, Textile World, 330 West 42nd St., New York 18, N. Y.

Favorable Comment on Cotton Sampling Plan

The article in the March TEXTILE WORLD on the terrible way that American cotton bales are put up and marketed was very interesting to me, as this has been one of my pet peeves. Efforts should be made toward better cotton packages, which would not require the efforts of any research laboratory but a simple trip to wherever cotton happens to be stored.

Until a mill man can trust the cotton seller to give him exactly what he says, he can never get the desired bale. In other words, considering that you have to cut the bale open to find out what is in it at every step of the way from the gin to the mill, it is a wonder that it arrives with any protection at all.

I will venture to say that if a mill bought its cotton today from a reliable broker and fed it into the mill without checking, it would soon stop the mill. You say, "How come?" My answer to this is that no lot of cotton that we get today is uniform. Every lot is off, either on grade or staple, anywhere from 15 to 85%. In some cases we have found staple from ¾ in. to 1 1/16 in. in the same lot.

I certainly am not smart enough to say whether the author's scheme will work or not, but someone ought to do something about it.

Incidentally, when you buy a bale of rayon staple, you not only receive a package that is covered on all sides, but the contents are chemically pure with no waste of any kind. Every fiber in the bale is the length stated on the outside. The moisture content is uniform and you pay for it on the basis of dry weight plus a standard regain. Every fiber is the same diameter. There is only one grade and each customer gets the same quality. The cotton industry should face the facts squarely and plan to meet them somehow. *(R-60)*

Cotton Sampling Plan Is Called Unworkable

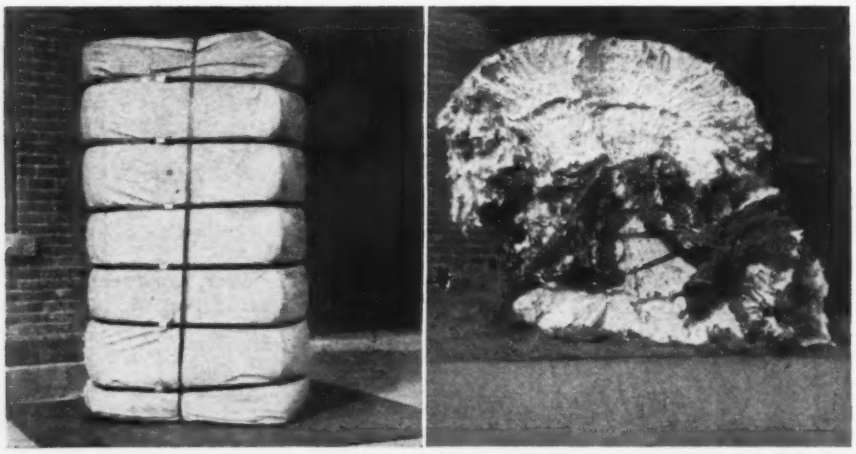
We notice in the March issue of your magazine an article on cotton sampling by Raymond W. Mitchem. With all due respect, the author of this article does not seem familiar with what has been done over many years by the Government to meet the problems which he approaches. The writer has manufactured bagging, operated cotton gins, cotton warehouses and sold cotton both export and domestic for 25 years, and cannot agree that the problem is as simple as indicated by Mr. Mitchem.

It is hard to believe that Mr. Mitchem has had very long experience in handling cotton.

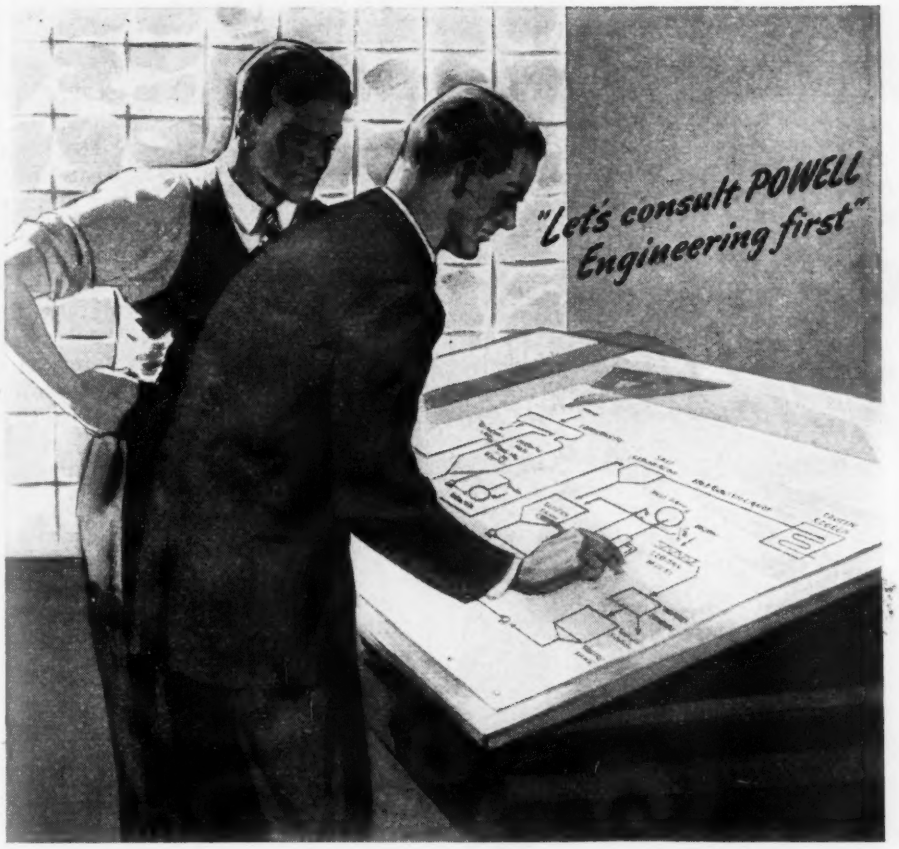
He is wrong on the cost of bagging, he is wrong as to any possibility that any kind of cloth is going to stand up in use more than two years. There is available from the Government a complete system of grading at the gin, which is largely used. It is provided by the Department of Agriculture under the Smith-Doxey Act, and, in addition to this, approximately 30% of current production is being classed for the government loan by the Department of Agriculture representatives.

With regard to his three questions to which he states the answer is obviously "No", we regret to say that we cannot agree that the answer is "No". With regard to the first question, it is not always necessary to sample a bale of cotton each time it is bought and sold, but, on the other hand, no mill will buy cotton and accept any class other than its own or that determined by arbitration. We have never been able to sell a bale of cotton by government classification without our own guarantee and we have seen the same bale of cotton show two or three different grades and staples as classed under Smith-Doxey, the Government loan, and by arbitration board.

With regard to the author's second question, the grade and staple does not change every day but mills do not use cotton simply because it has a specific class. For instance, we are today shipping mills three different types of strict low middling: first, a



Bale of rayon staple compared to cotton bale in bad shape as mentioned in comment.



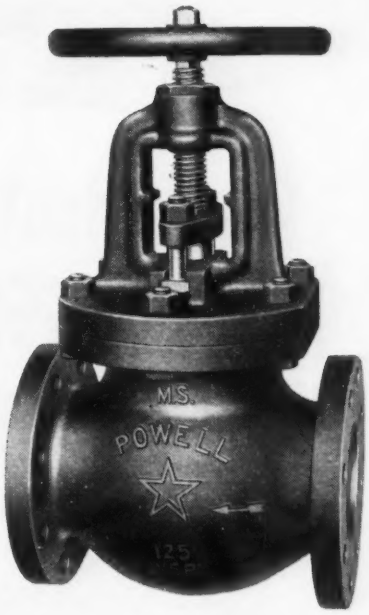


Fig. 457—All Iron Globe Valve for 125-pounds W. P. Has flanged ends, outside screw rising stem, bolted flanged yoke and regrindable, renewable iron disc. Steel stem. Sizes, 2″ to 10″, inclusive.

In American Industry, the March of Time has become a gallop. Almost daily new products and processes are brought out of the laboratory and put into mass production.

But the pace is never too swift for POWELL Engineering. As fast as new demands for flow control equipment arise, POWELL is ready with valves that "will do the job," for *Powell performance is pre-determined.*

So don't risk valve failures by installing valves that were not specifically designed to meet your requirements. Consult POWELL Engineering *first.*

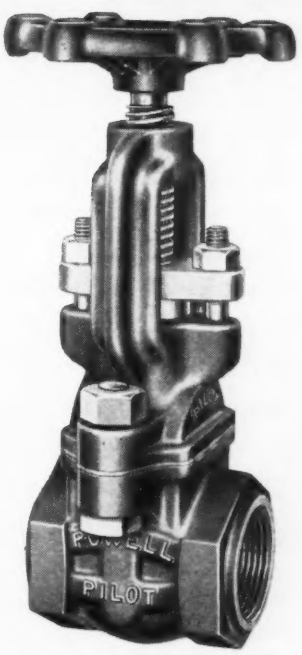


Fig. 480—All Iron "Pilot" Gate Valve, with screwed ends, outside screw rising stem, bolted flanged yoke and taper wedge solid disc. Available in sizes, ½″ to 2″, incl., for 150-pounds W. P.; 2½″ and 3″, for 125-pounds W. P.

Fig. 1816—All Iron Gate Valve for 125-pounds W. P. Has flanged ends, outside screw rising stem, bolted flanged yoke and taper wedge solid disc. Sizes, 2″ to 30″, inclusive.

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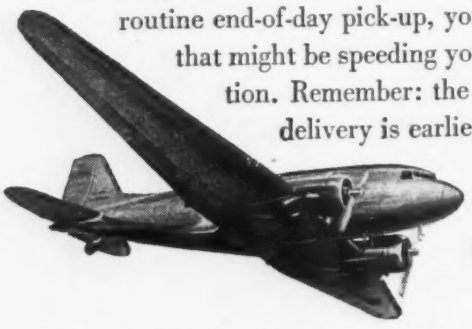
Cincinnati 22, Ohio

POWELL VALVES

AIR EXPRESS is a 3-mile-a-minute conveyor belt between your plant and consignee. *Use it efficiently!* When shipments are ready, call for a pick-up...right then! If you wait for routine end-of-day pick-up, you let a lot of planes go by that might be speeding your shipment to its destination. Remember: the secret of earliest possible delivery is earliest possible shipment!



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middling color with strict low leaf; second, a middling color, rough character; and third, a gray strict low, clean and smooth. All of this cotton would be classed strict low middling but due to the different characteristics, it finds three different markets, and one mill would not want what the other desires. If you will trace this bale of cotton; it started out at the gin in good bagging, was sampled at the gin; bought and delivered to our warehouse by a country merchant; we sampled the cotton and sent the sample to the Government for government classification where it graded strict low middling 1 in.—so far two samples have been used. We have now redeemed the cotton from the government loan and will sell the mill strict low middling 1 in. subject to the approval of the samples as he wants a particular character and a particular color.

Our original sample from the cotton is now 18 months old and dried out and sometimes changes color, so fresh samples are necessary for submission to the mill. The third sample is sent to the mill that accepts the cotton. When they receive the cotton, they sample it the fourth time to see that it is the same cotton that they bought.

In many instances it is possible to take cotton direct from the warehouse sample to the mill with only one or two samplings of the bale, but this is the exception rather than the rule.

In many years of experience we have found no way of getting around the fact that cotton is bought, in many instances, on particular descriptions that require careful comparisons with actual samples and a broad grade from a licensed classer is not sufficient.

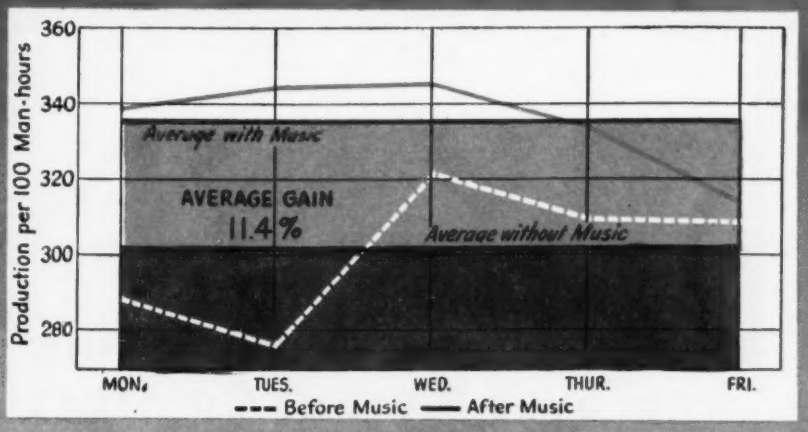
With regard to Mr. Mitchem's third question to which he says the answer is "No", we venture to state that if he will submit 100 bales of actual samples to three different licensed classers, he will find rather considerable variations in grade and staple because cotton classing has never been a definite science, and character and spinning value cannot always be expressed in terms of grade and staple.

We are writing at some length because this problem has been the subject of political debate in Congress many times. It has been involved in questions of net weight and certified grade and several times theorists have come very near throwing monkey wrenches in the rather delicate machinery of cotton marketing.

All of Mr. Mitchem's proposals

MUSIC BOOSTS WORKER EFFICIENCY

Here are results of actual tests conducted by the Stevens Institute of Technology. About 100 workers were checked daily for five days *without* music, and then for five days under the same working conditions *with* music. The curves show an average improvement of 11.4% in productive efficiency after music service was installed.



PRODUCTIVE efficiency is a good index of worker fatigue. If workers feel tired and nervous, productive efficiency will drop. But worker fatigue can be relieved by the use of *planned* industrial music—the kind of music provided by the RCA Industrial Music Service.

With music, your workers feel better—their spirits are lighter—not just during the day, but at quitting time, too. They will go home happier, less tired.

Music is in this way helping to cut absenteeism in war plants all over the country! It reduces petty ailments (headache, etc.) which are caused by "jangled" nerves. That means fewer calls to the infirmary, less time-out, and better morale. These results are proved by actual tests, and can be reproduced in other plants.

Music can be used even in noisy areas.

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RCA provides complete electronic sound systems for all types of installations, plus a scientifically selected library of music chosen for industrial use from the vast RCA treasure house of recordings. The sound system can be used for paging and other communication service.

Subscribers to the RCA Industrial Music Library Service also receive the benefits of RCA psychological research, and the help of RCA specialists in planning plant broadcasting schedules.

The story of industrial music and what it offers you is told in the new booklet, "Manpower, Music, and Morale," sent free on request. Send the coupon, or write to RCA, Dept. 70-59A, Camden, New Jersey.

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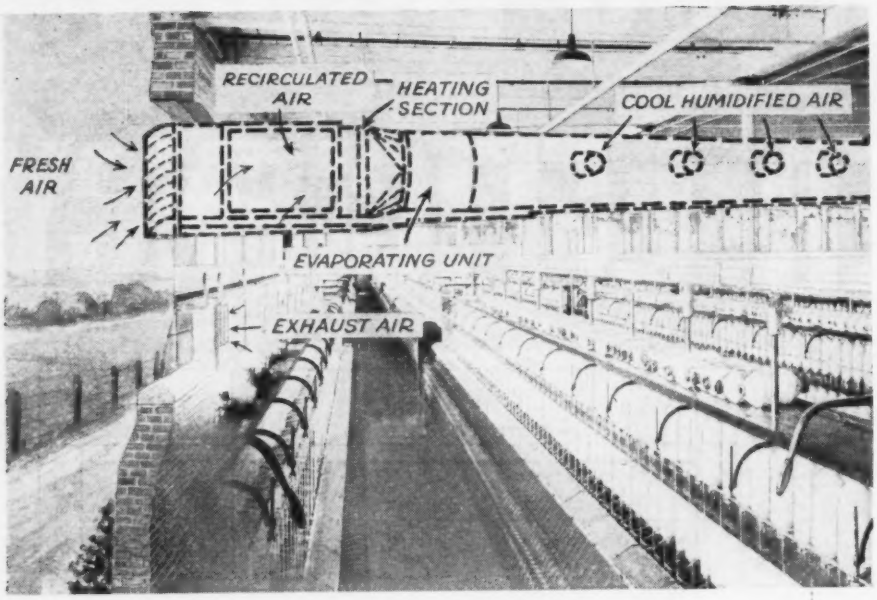
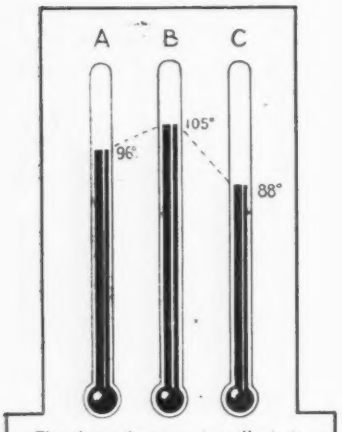
Is Your Mill HOT — ?



Bahnson Air-Conditioning improves Worker Comfort by EVAPORATIVE COOLING

Your hot weather problems in textile mills can be solved economically and satisfactorily by Bahnson Air-conditioning Systems — whether they require refrigeration or the more economical evaporative cooling and ventilation. The Bahnson HUMIDUCT and AIR VITALIZER have the advantage of *flexibility* in their functions which incorporate not only positive humidity control, but air cleaning and heating as well as evaporative cooling.



The above thermometers illustrate a hypothetical condition to show temperature ranges on a hot day

A—OUTSIDE TEMPERATURE.
B—NORMAL TEMPERATURE INSIDE MILL WITHOUT AIR-CONDITIONING.
C—INSIDE TEMPERATURE WITH BAHNSON AIR-CONDITIONING.

Flexibility with these unit systems means that the system can be easily altered or extended in accordance with rapid war time changes. Whole systems can be economically moved to new locations in the postwar period.

For the sake of your worker comfort and operating efficiency, consult our Engineering Department for the air-conditioning best suited to your plant.

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have been tried and have resulted in little if any improvement in the general situation, but they are all still available without any additional legislation. Nobody could take a seven pound sample from one sample hole, nor if taken at the time of ginning could such a sample be economically handled. And, too, no farmer would contribute seven pounds, or $1.40 per bale, to such a program. We do not think he has figured the cost of licensed classers in all the gins and the envelopes he proposes for samples, nor the cost of identifying the bale as compared with present less costly methods of marketing. We might add that the Department of Agriculture has never found a satisfactory method whereby a bale of cotton can be so definitely tagged or identified as to guarantee that it will carry its original class throughout its destination. The loan program has accomplished much in this direction but Government classification is not considered in the trade any more reliable than that of any reputable firm. (R-59) John S. Jenkins, Jr., Dixie Jute Bagging Corp.

Largest Picker Lap

In the December issue M.T.S. asked for some limiting factors as to lap size. However, R-41, in the February issue, did not answer the questions.

The writer felt that M.T.S. was seeking information to guide him in determining if he had the most practical and economical set-up.

The construction of a picker front is the first limiting factor. In other words, just so large a lap can be made, all depending on the space provided by the manufacturer of the machine. Laps must be made so when they have reached the maximum yardage, the diameter must not be such that the lap will rub against the float roll, otherwise stretching and distorting the outer layers results. Then, on dry, windy days the lap will be puffy and larger in diameter than on humid days.

Laps that have been stretched and are too puffy will split and large flakes may drop off in handling.

The larger the lap the more difficult it is to handle. The writer has found 49-50 lb. to be the maximum.

Another limiting factor is the space for the lap behind the card. Anything larger than 49-50 lb. will rub back of the card, causing waste. M.T.S. has the right idea in running as many yards as possible per lap.

Re-designing of present pickers and

MODERN MILLS *modernize* WITH UP-TO-DATE HUNTER MILLS AND WASHERS

Mills seeking the latest and best in Wet Finishing Machinery should, and do, choose Hunter designed machines such as illustrated on this page.

Hunter Mills are now producing everything from heavy Army fabrics to tough fulling low grade fabrics, or 7-ounce flannels, in the most efficient manner.

These units represent the most modern equipment obtainable, and machines that do the scouring and fulling job quicker and easier.

For example, Hunter Fulling Mills are equipped with hydraulic tension for the top roll, stainless steel lining, guides, stop motion, and crimping boxes, and will give you twice to four times the capacity of your older Mills with far more uniform results. Production is often increased to a point where twice the load is handled in two-thirds or even half the time.

The Hunter GK is the most modern available rope type scourer. Equipped with a new principle of applying water to the goods, new type suds box and gates, rubber rolls, roller bearings throughout, etc., it will reduce your overall scouring and rinsing time.

Full details on both of these modern machines are completely described in up-to-date bulletins. They are yours for the asking. Write to

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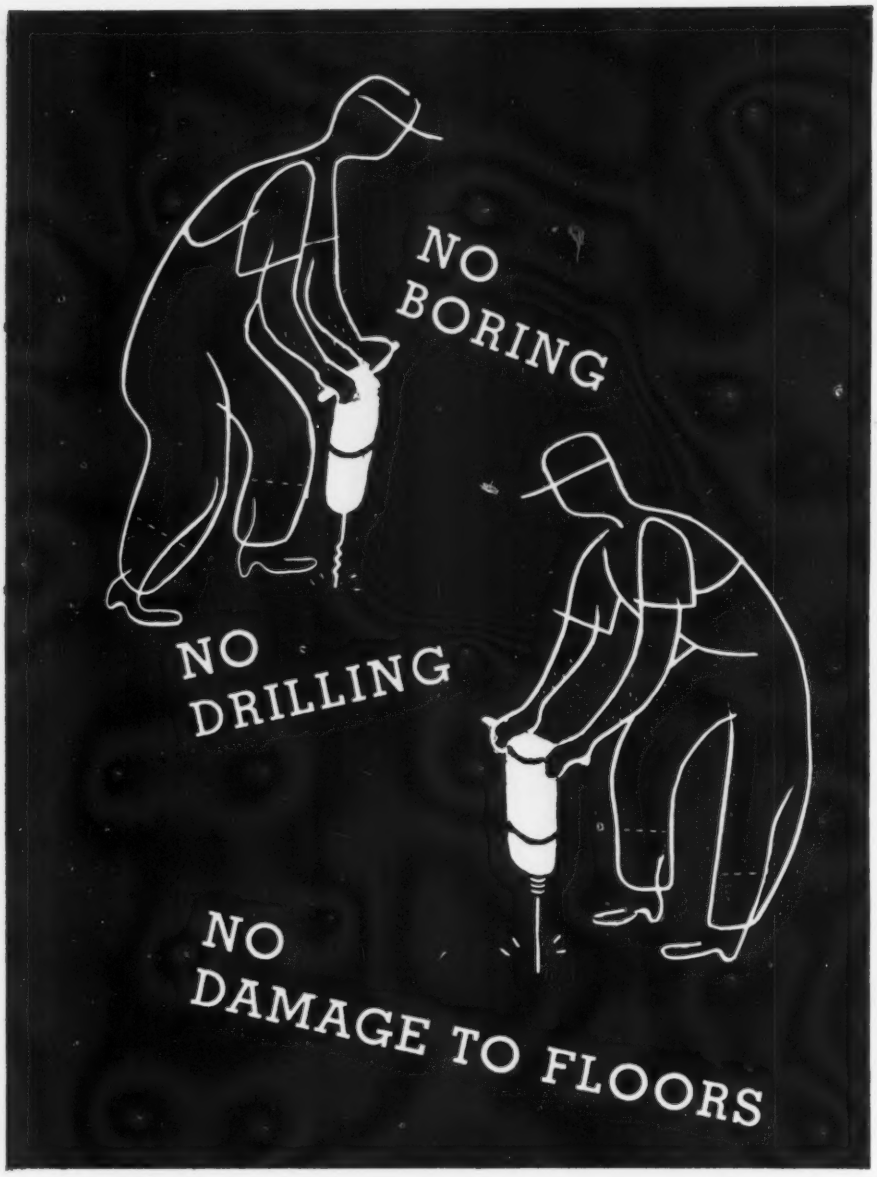

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cards is sure to come after the emergency. Too much money is today expended for labor in handling laps.—(R-49)

Methods to Figure Drafting on Mules

In regard to the article in Round Table of March of TEXTILE WORLD, there is some controversy on the question of figuring draft percentages.

The method used by old time mule men is this: draft equals amount of roving delivered by rolls; for example, draft equals inches delivered divided by inches in total length of draw.

Personally, I feel that draft should be the length of the stretch; for example, total length of draw divided by amount delivered equals draft. This is the method used by both Whitin Machine Works and Davis & Furber Machine Co. on spinning frame tables.

Roving must be drafted to make good yarn. (R-58)

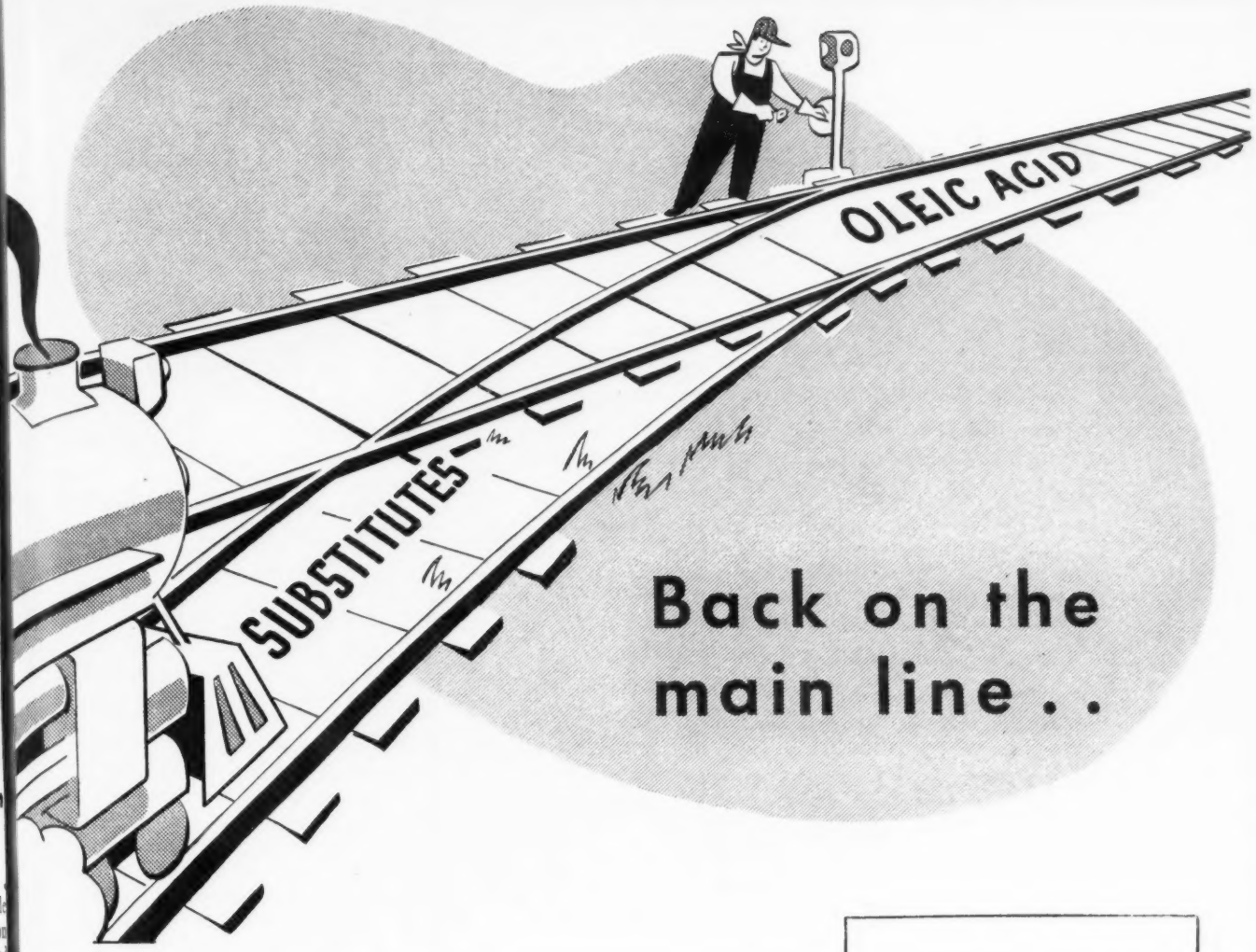
How do You Stop Rayon Roving from Slipping on Bobbins?

We have had considerable trouble with rayon staple roving slipping on the bobbin and it causes much tangled work. We do not know just why this condition persists, and perhaps some Round Table reader can throw light on the causes of this condition and suggest some remedy.

In general, we would like to know which way to place the twist and lay on the bobbin in order to prevent this slippage, or any other suggestions that come to mind as we are anxious to stop this wastage.—(R-50)

Power Understated For Auxiliary Dryer

We noticed the article you had in TEXTILE WORLD for March about the auxiliary dryer installed on one of our slashers. There is an error in this article in regard to the power consumed by the lamps on the dryer. Where you state that the power was equivalent to that necessary for a 5-hp motor, it should read that the power consumed is approximately 25 kw. per hour. We should like you to make this correction; and also you might add that unless these lamps are cleaned often, you lose what speed you get with these lights.—Ray Swetenburg, Gen. Supt., Ware Shoals Mfg. Co.



Back on the main line . .

All red oil (oleic acid) off allocation

It has just been announced by F. D. A. that, as of April 1st, *all* red oil can be sold subject only to the certification requirements of FDO 53 and/or FDO 87. These orders have to do with use and inventory control, but do not preclude your using red oil for any purpose after the 15th of each month.

As of April 1st, *all* red oil (oleic acid) has been removed from allocation, and our inventory position has improved to a point where we can make prompt shipment of all distilled and saponified grades of red oil.

We recommend Emery's red oil for oiling of raw wool stocks, and the scouring and fulling of fabrics, because of its advantages over other fats and fatty acids.

First, being entirely of animal origin and containing a minimum of highly unsaturated fatty acids, the development of a gummy film through oxidation is held to a minimum. And stocks lubricated with red oil give excellent results.

Second, the characteristics of textile soaps made from oleic acid can be controlled. They are uniform and free rinsing. In fact, the oil itself can be scoured off by boiling with a minimum quantity of mild alkalies . . . soda ash, for example.

Emery's red oils, both distilled and saponified, are available over a wide range of specifications. Let us know your problem, so that we can recommend a suitable grade and type. We will gladly send you samples on request.

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when release of war-conscripted materials will permit recovery from obsolescence in Drying Machinery and Equipment . . . don't be dissuaded from making that recovery complete. Turn to the makes and models representing the *ultimate* in improved design, operation, performance and maintenance, and thus assure the soundest basis for profitable business and the longest possible postponement of future replacements.

Finishing plants and departments taking this course will find "NATIONAL" ready with machinery and equipment proven to produce results never before accomplished in textile drying. Higher speeds, better quality uniformity and lower maintenance costs will provide every means to meet post-war demands with unprecedented efficiency and economy.

Looking at "NATIONAL'S" war-production record, and knowing the history of the company's progress toward the high place it has reached in the industry, peace-time buyers can have every confidence in "NATIONAL'S" ability to supply better machines for better drying just as soon as the "all clear" is sounded.

In the meantime, suitable priorities will enable qualified plants to secure, now, many of the advantages that will later be generally available to buyers of "NATIONAL" Machines.

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Bleaching Absorbent Cotton

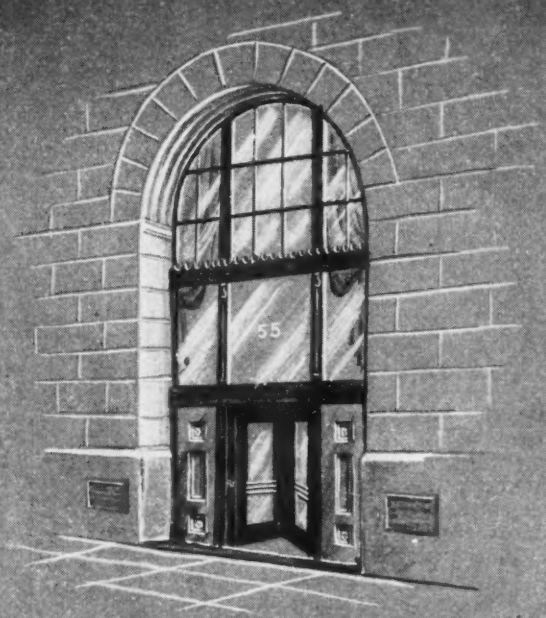
Technical Editor:

I am interested in obtaining information in reference to bleaching of absorbent cotton. I should like to know what processes are used and what type of equipment is needed. (8976)

The bales of cotton waste are opened and passed through a willow or cone duster which removes the dust and dirt and loosens the material.

The next step is the boiling of the waste under pressure with caustic soda solution. For the particular purpose of producing absorbent or medicated cotton, some bleachers prefer an upright cylindrical kier with outside circulation and centrifugal pump, and with the usual perforated false bottom supplemented by a perforated false top, in order that the liquor may be forced through the material first in one direction and then in another. Rotary kiers should also be suitable. The caustic soda solution usually used has a concentration of 1° Be.—or approximately 4 to 5% caustic on the weight of the goods. The boil for this purpose usually extends for eight hours, under at least 10 to 15 lb. pressure. After the boil, the material is rinsed in the kier with warm water, and allowed to drain.

The next step is the bleaching. In one method the material is transferred to a wooden cistern, with a false bottom, again washed, bleached with sodium hypochlorite solution, washed, scoured, and washed. For every 10 lb. of the material, there would be required approximately 1 gal. of chemic (sodium hypochlorite) containing 8 grams per liter of available chlorine. The chemic can be economically prepared from liquid chlorine and caustic soda solution. (This strong chemic solution should, of course, be diluted to the proper volume for use.) The material is then transferred to



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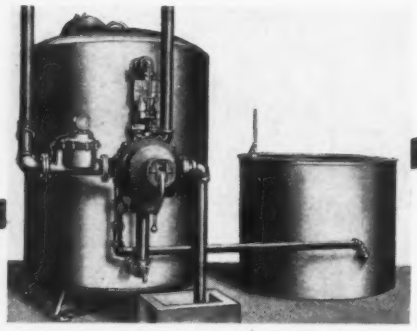

It is estimated that more than 60% of the returns encountered in bleaching, dyeing and finishing plants are due, directly or indirectly, to the use of raw water or water that has not been properly treated. Rust stains, oil stains, sad or dull shades on dyed goods,—these are just a few of the troubles which can be traced to improperly conditioned water. Iron, hardness, turbidity, Algae, and other factors all contribute to these troubles. Refinite Water Conditioning equipment, specially designed to meet YOUR particular needs, will eliminate these factors—and the accompanying troubles. Write Refinite today! There's no obligation. Refinite laboratory and technical service is at your command.

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washer, either of the Harrow or the Hollander type employed in bleaching wood pulp; here it is again washed, flued, and—if necessary, scroopped. In another method, the material, after kier boiling, is transferred directly to the Hollander, where it is washed, chemiced, washed, scoured, washed, and blued.

The purified and bleached cotton is squeezed, hydro-extracted or vacuum-extracted to remove the surplus moisture, and then dried on an apron dryer.

The dryed cotton is made into a lap on a picking machine, then is carded, inter-leaved with paper, rolled, cut to the correct size and packed. After bleaching and drying, another method sometimes used, we understand, is to treat the cotton on a wool-type opener and then pass to a hopper-feed card.

Cleanliness of machines and materials is of utmost importance.

Kinked Woolen Yarn

Technical Editor:

I would like to comment on the answer to 8964 which appeared in the February issue, in regard to kinked woolen yarn.

Could the trouble be in the card room?

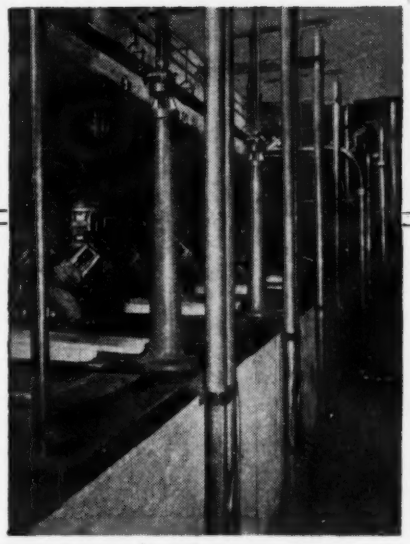
Are the rings or tapes of the proper width to run this heavy stock? The stock is on the heavy side of ½ run. Are the fibers of such a character that in separating them one tape or ring does not rob the one next to it?

Have the cards been clothed with the proper wire on the cylinders, workers, etc. for such heavy stock?

Or, assume that the trouble is in the spinning room, the first step is to check the draft.

The drafts mentioned are not too much for ½-run stock in the weight given. The mule can be set so no spindle points result, even at a 535 grain weight. The boss spinner should know the quality of stock being used and then decide on roving weight as poor quality cannot be drafted like good stock.

On a J & B mule there are three sets of wings to be used on the draft-scroll and four sets on a D & F mule. At the weights given, I would use the middle set on a J & B and next to largest on a D & F. When the mule is out to the quadrant, set the top-draft rope so there is 2 turns left on. The setting of the roll gear depends a little on the quality of the stock. On good stock it can be 2 to 4 teeth smaller than on poor stock, as poor stock will stand little strain while the roving is being delivered. On a J & B mule, I



TELLURIUM LEAD DATA SHEET

SUBJECT:

Temperature Change in Acid Equipment

The problem: Many industrial processes involve frequent and rapid changes in temperature. These heat changes naturally cause considerable expansion and contraction in a metal lining. Since tanks must be leakproof and no allowance can be made for expansion in the plane of the lining, a certain amount of warping or bending movement, such as buckling, is to be expected. However, in successive operations, if a lining warps or bends again and again at the same point, it may eventually fail by cracking.

This service condition is frequently encountered in tanks used for "cutting" sulfuric acid. As water is added to the raw acid, the temperature rises sharply and then falls again. This cycle is repeated over and over and is accompanied by repeated expansion and contraction of the tank lining.

How it has been met: In our files are a number of statements from users to the effect that Tellurium Lead has given superior service under such conditions.

One user reports: "We recently made a check-up on our large sulfuric acid mixing tank lined with your 10 lb. Tellurium Lead. The lead was found to be very smooth and uniform with no signs of buckling, although this tank is used for mixing raw acid to lower specific gravities, which creates heat, which in turn steps up expansion and contraction in the lead."

Another writes: "We used Tellurium Lead to line a tank used for cutting 1.835 (sp.gr.) acid to battery strength, an exceptionally tough service at best. A considerable amount of heat is generated. This operation has been repeated daily for nearly three years and to date no leakage has been experienced. The lining is as good as the day installed."

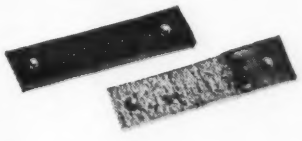
Why does Tellurium Lead give longer service? Undoubtedly one reason is its ability to work-harden. When Tellurium Lead is stressed, it increases its tensile strength, becomes tougher and more resistant to deformation than before. Thus movements, such as the buckling of a tank lining, actually toughen the metal at the point of deformation, with the result that subsequent expansion is relieved by movement at other points.

A laboratory demonstration of Tellurium Lead's capacity to work-harden is shown in the photos above. Sections of Tellurium Lead pipe (top) and pipe made from lead without tellurium (bottom) were similarly stressed by stamping and then drawn out at equal rates in a tensile testing machine. The Tellurium Lead was strengthened by the stress while the lead without tellurium was weakened and fractured.

OTHER TELLURIUM LEAD ADVANTAGES

In addition to its capacity to work-harden, Tellurium Lead has shown in many cases an improved resistance to corrosion at elevated temperatures as well as greater resistance to failures brought about by vibration or by stress-corrosion.

Higher corrosion resistance at elevated temperatures



Shown by the flash test. Here strips of Tellurium Lead and lead without tellurium were immersed in 96% sulfuric acid at 518° F. for three minutes. The lead without tellurium (bottom) lost 5.11% of its weight due to corrosion while the weight loss of the Tellurium Lead (top) was only 0.97%.

Improved vibration resistance:

Demonstrated by laboratory testing machines in which test specimens are subjected to rapidly repeated stresses. In these tests which simulate vibration, Tellurium Lead was found to have a higher endurance limit, nearly twice the load being required to fracture it than lead without tellurium.

Improved resistance to corrosion-fatigue: The corrosion of linings, pipes and coils is frequently accelerated by mechanical stress. The corrosive action is particularly severe when the stress is dynamic. Apparatus subject to vibration furnishes a good example. It has been found that Tellurium Lead's better endurance under vibration, as well as its improved resistance to acid attack, makes it less subject to such corrosion-fatigue failures.

Many uses: Tellurium Lead is extensively used in handling sulfuric acid, sulfates, phosphoric and chromic acids, pickling, electroplating and other corrosive solutions. It is employed in chlorinations, reaction chamber processes, reductions and sulfonations. Typical applications include agitators, aprons, drums, ducts, fans, flooring, heat exchangers, heating and cooling coils, kettles, pans, stills, table tops, tanks and vats.

Working properties: Tellurium Lead may be bent, seamed, flanged and burned in the same manner as ordinary lead.

TELLURIUM LEAD

What it is: Tellurium Lead of our manufacture is time-tested St. Joe chemical lead alloyed with a small quantity of tellurium. It gives the advantages of this well-known chemical lead plus important new ones.

Available forms: Tellurium Lead is available in sheet or pipe form or fabricated in coils for heating and cooling purposes.

For further information or advice regarding the use of Tellurium Lead, write:

NATIONAL LEAD COMPANY—New York 6, Baltimore 3, Buffalo 3, Chicago 80, Cincinnati 3, Cleveland 13, St. Louis 1; National-Boston Lead Co., Boston 6; John T. Lewis & Bros. Co., Philadelphia 7; National Lead & Oil Co. of Penna., Pittsburgh 12; Georgia Lead Works, Atlanta; American Lead Corp., Indianapolis 6; Master Metals, Inc., Cleveland 16; The Canada Metal Co., Ltd., Toronto, Montreal, Winnipeg, Vancouver.

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would use a 58-tooth roll-gear to start with and if needed by a 56-60 tooth gear.

The drive gear would have to be determined by the "feel" of the yarn in drawing. Some spinners have a mistaken idea that on heavy work or work where there is a long delivery of roving, that raising the tension faller wire to the top of spindle helps. I have never found this so. If a mule is properly set the tension faller wire does not have to be near the top of spindle.

If the mule is easing-in too fast it will permit kinky places in the yarn. This can be determined by the "feel" of the yarn as the mule is twisting and is easily corrected.

Backing-off and winding are two important settings to prevent kinks. In backing-off, the winding chain must not be too loose.

The faller wires want to be set properly so when the mule backs off, the wires engage the yarn at the proper time and give the spindle time to unwind as the fallers change. When the bobbins on a mule are about half full the fallers tension wire should remain at the same level when the mule is traveling inward and winding the yarn on the bobbin. If the wire raises in the last foot or so, the quadrant circle gear can be lowered 1 to 2 teeth nearer the floor when the mule is at the rolls and vice-versa if the tension wire drops in the last foot or so.

Have the quadrant circle gear set properly and then put enough weights on the hangers for the strength of the yarn. This can be determined by adding weight until the ends start breaking in backing-off. This action will occur at the start of a set, hence a few weights can be slid off for the first 15 to 20 draws and then replaced. On a

The above poster is being distributed in an effort to promote greater use of cotton.

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Today Staley cooperation and service are more important
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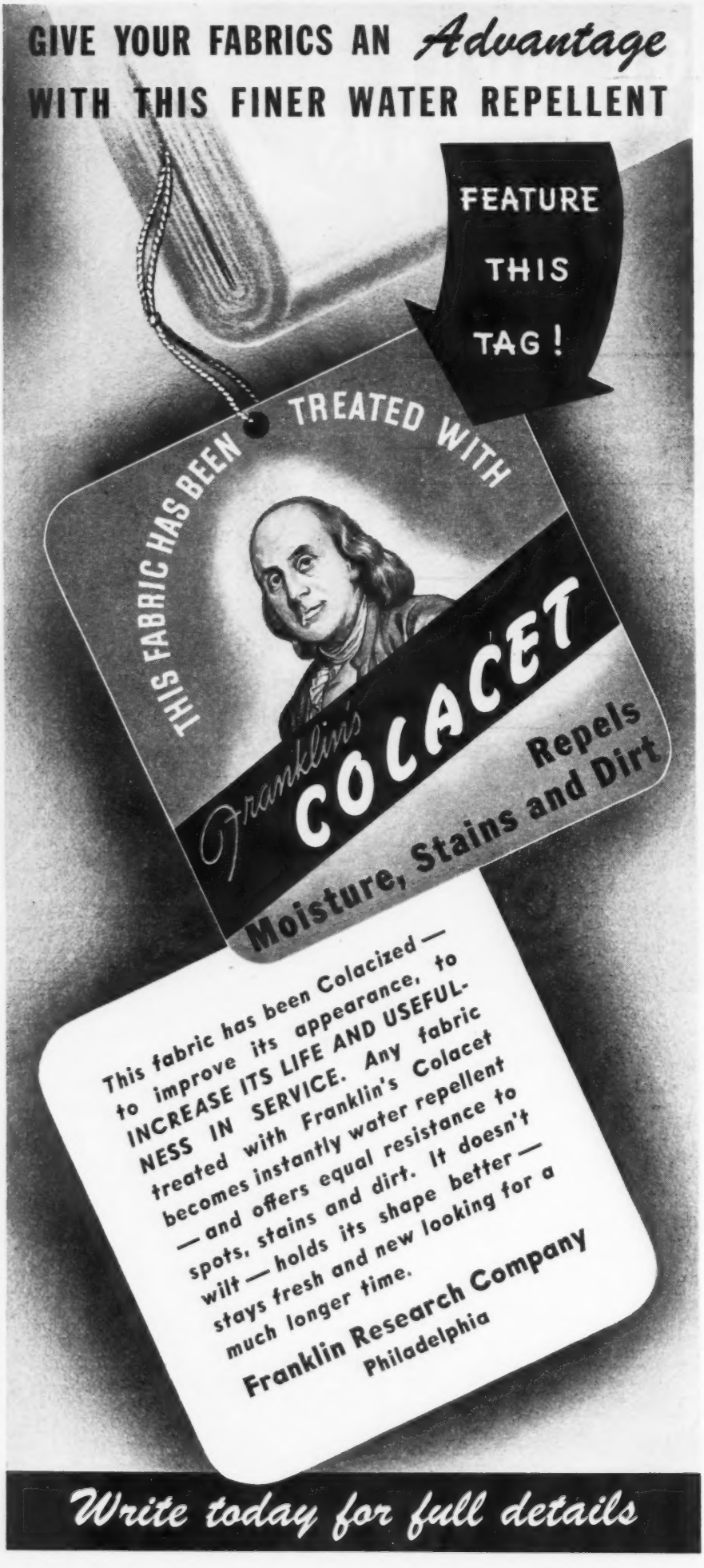
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mule it is better to buy extra hangers and put them on to distribute the weight more evenly. Eight hangers on a mule with 5 weights apiece are better than 6 hangers with 7 weights apiece, as a more uniform tension is obtained all along the mule length.

The pitch of the spindles are usually 12 to 15 deg., but on extra good stock it can be less, whereas on poor stock it can be greater. The top of spindle is usually set even with, or $\frac{1}{4}$ in. above the bottom of the bottom roll on good stock and can be set $\frac{1}{4}$ in. to $\frac{1}{2}$ in. below the bottom of the bottom roll on poor quality stock.

Pitch and setting height of spindle can cause a difference in the running of stock and the quality of yarn that the mule produces.

I agree that more attention should be given the weight of yarn off the card as it helps out on the card-room production. This in turn, affects the whole mill.—(8979)

Imperfections in Rayon Knitting Yarn

Technical Editor:

When knitting crepe rayon yarn on our 20-in., 24-cut, 48-gage Scott & Williams interlock machine, using 2 thd. 50/30 den. Du Pont combination 60/40 turns left twist on cones, we experience from five to fifteen imperfections per piece of cloth 75 yd. long and 42 in. wide. On the other hand, when we run cotton yarn (36s C.P. yarn) or regular 100-den. rayon yarn, no trouble whatever is experienced, even though either of the latter yarns are run immediately after the troublesome crepe yarn.

There are quite a number of possible causes for this difficulty, most of which center about the breaking of one of the two threads of the crepe rayon yarn. A relative humidity at 67% is kept in the knitting room. We cannot oil the yarn as we operate on a commission basis at so much per pound, and our customers will not tolerate this as they would be paying for about 5 lb. of oil in 25 lb. of yarn, and would also have to pay for a de-oiling operation at the other end.

The throwers, from whom we buy the yarn, have not been able to establish the cause of the trouble.

Our inquiry can be summarized as follows:

1. Can the trouble be overcome at the source?
2. Is there anybody who knows how to mend these imperfections in the finished piece? (8981)

Judging from the statement that one of the two threads breaks, this is a thrown knitting yarn similar to the common 2-ply 50-den. that is thrown

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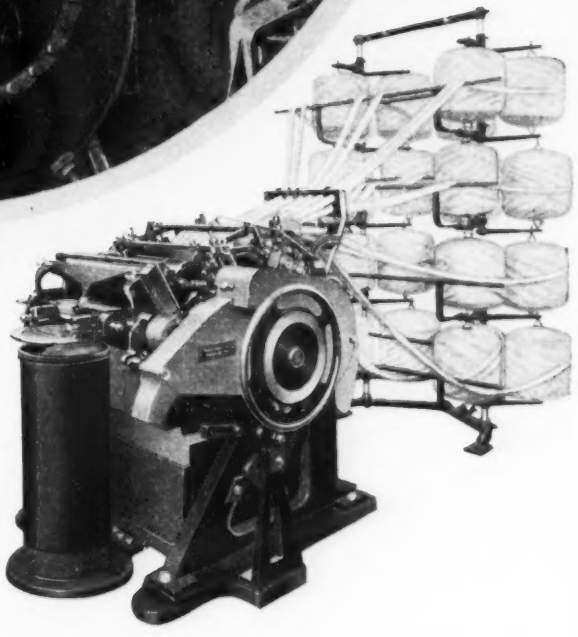

You will no doubt wish to make alterations, replacements and possibly additions to your plant.

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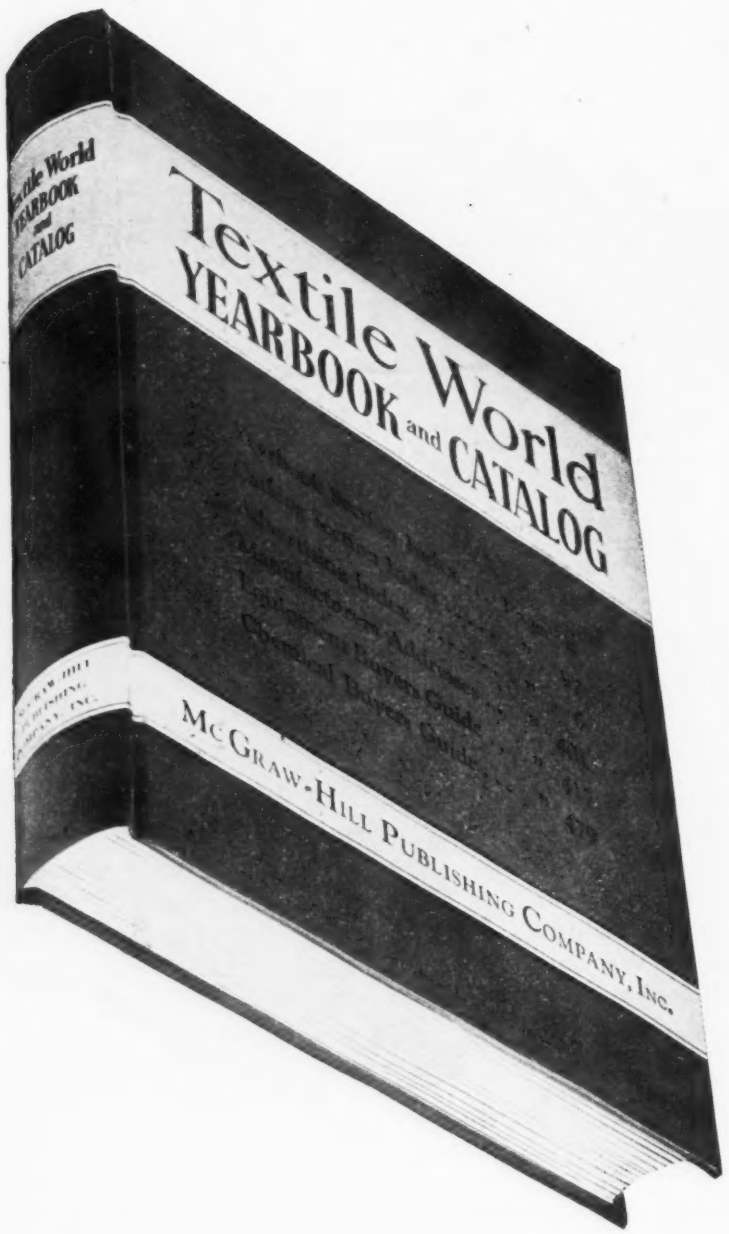


"The Yearbook with the Orange Bands"

1 end 40 turns S, and 1 end 60 turns Z, piled 10 turns S.

This yarn is prone to have one component break if ply tensions are not controlled properly by the throwster. This yarn is known as "50/50-60/40/10," whereas the yarn in the inquiry is stated as being Du Pont 50/30-60/40. If the one thread actually is 30-den. then, of course, the problem in plying might be aggravated, which might cause the breaking of the one end. However, the only 30-den. Du Pont makes is Fortisan and we question whether the yarn actually is "50/30 den. Du Pont."

The yarn can be tested to ascertain if the fault lies with the throwster. If, upon stressing the yarn repeatedly with a force less than that required to break the combination yarn, one component frequently breaks first, the yarn contains an inherent defect that the throwster might be able to correct, or, at least, improve.

Oiling, to the extent of 20%, as stated, should not be necessary, but surely the yarn is lubricated either by the manufacturer or throwster, or both. In any event, it should be oiled to withstand both throwing and knitting.

The defect is not very clearly stated. It could be merely one thread of the ply breaking or it might be a hole (or any of several other forms), therefore it is difficult to know if mending is possible.

Cause of Odor In Rayon Fabric

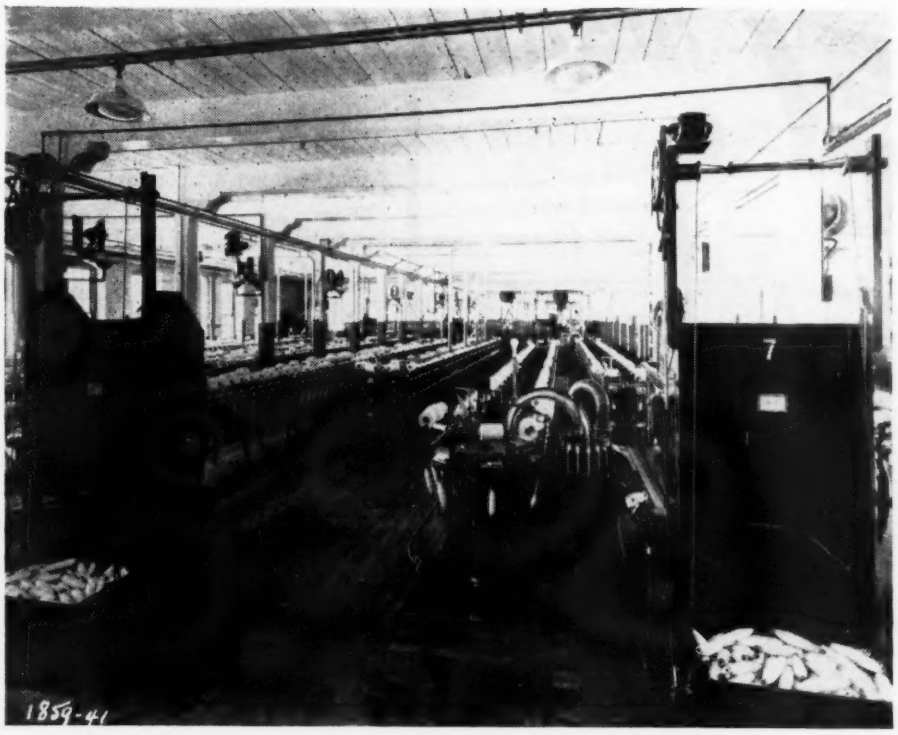
Technical Editor:

We are attaching hereto a sample of viscose satin which has a very peculiar odor that we cannot account for and the dyers state that it is not their fault.

Have you, in your varied experience, run into any trouble of this nature? If so, what has the cause been attributed to? We do not, at the moment, notice any particular odor from the gum goods here in the mill, although we did have a piece returned to us from the dye plant that has a strange odor, but nowhere near as bad as the finished cloth. We might add, for your information, that the piece of gum goods returned to us from the dyehouse has not been there very long. Any help that you may have to offer will be greatly appreciated. (8980)

This cloth has an odor due to oxidized finishing oils. The types of oil available today vary greatly from one substitute to another. The particular oil used for finishing this cloth probably had a base of one of the least expensive of the substitutes used in

WOUND FILLING HAS ARRIVED



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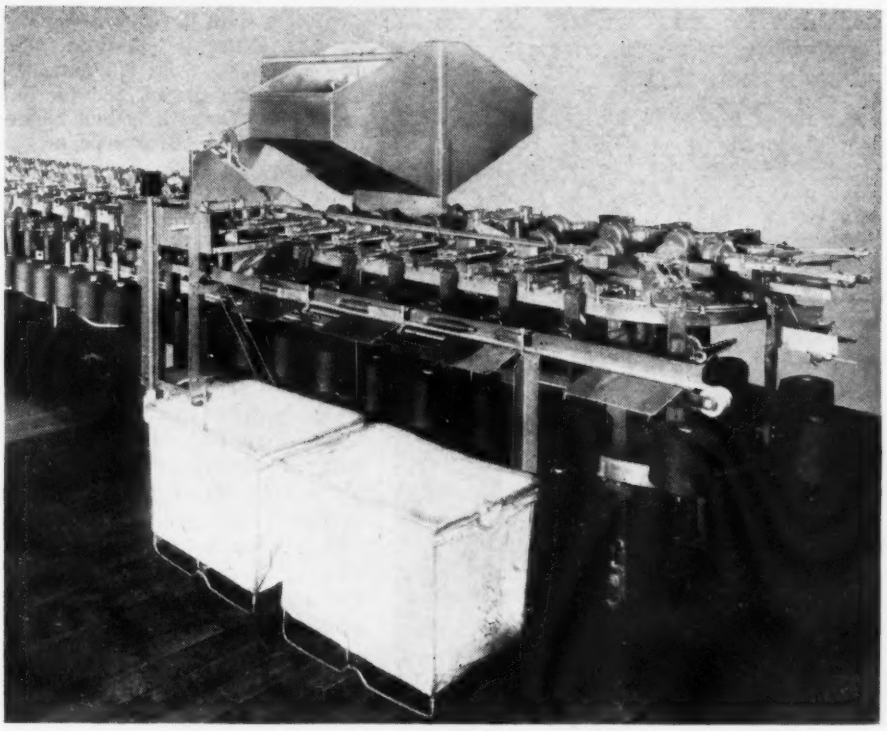

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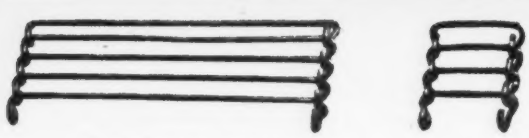

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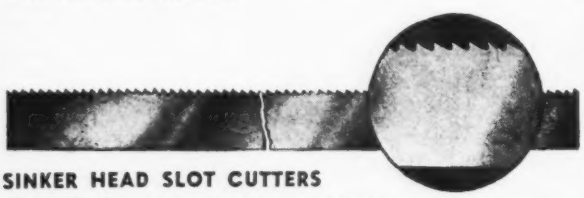

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place of olive oil. It tends to oxidize, with the odor noted on the material. The latter is entirely eliminated by a wash in soap at a temperature of 160° F. for 15 min., followed by a warm and cold rinse. This cloth may also be made useful by airing for some time; which will cause most of the smell to evaporate. Storing in a confined space will accentuate the odor.

Elastic Fabrics

Technical Editor:

Inclosed herewith are a number of samples of elastic fabrics which we should like to manufacture in South America. We have rubber covering machines but will need to install warping equipment and looms. Will you let us know whether a regular warping machine as used for cotton will be satisfactory or whether a special type of warper is required?

Is a regular silk and rayon loom suitable for weaving these fabrics or is some special loom needed? The maximum width of the fabrics which we plan to manufacture is 20 in. What type of a loom do you recommend and how wide should it be? What reed do you recommend?

Should the rubber covered yarn be used in the warp or the filling? If an elastic yarn is used in the warp should it be woven stretched to its maximum length or should it run with minimum tension? Kindly outline the method for finishing this fabric. Does the fabric require calendering? If so, what type of calender should be used? (8961)

Samples 1, 2, and 3 are woven fabrics. Two of the samples were not numbered and were not woven on a regular loom, but made on a bobbinet or similar type of machine which is not manufactured in the U. S.

Sample 1 will require a regular rayon warper, as the warp is solid rayon. Sample 2 may be warped on either a cotton or rayon warper. Sample 3 must be warped on a modified over-end high-speed warper.

A satisfactory type of loom for Samples 1, 2, and 3 is a Crompton & Knowles dobby type at least 36 in. wide for 20 in. fabric.

The reed will vary with the type of construction of the fabric.

Covered-rubber yarn is used in either warp or filling. Samples 1 and 2 have rubber in the filling. Sample 3 has rubber in the warp.

The elastic yarn should be warped at fairly high tension.

These fabrics are usually dyed on a jig and dried on cans. Satins require calendering, usually on the silk type of calender. Other types of fabrics, as a rule, do not require a calendering operation during finishing.

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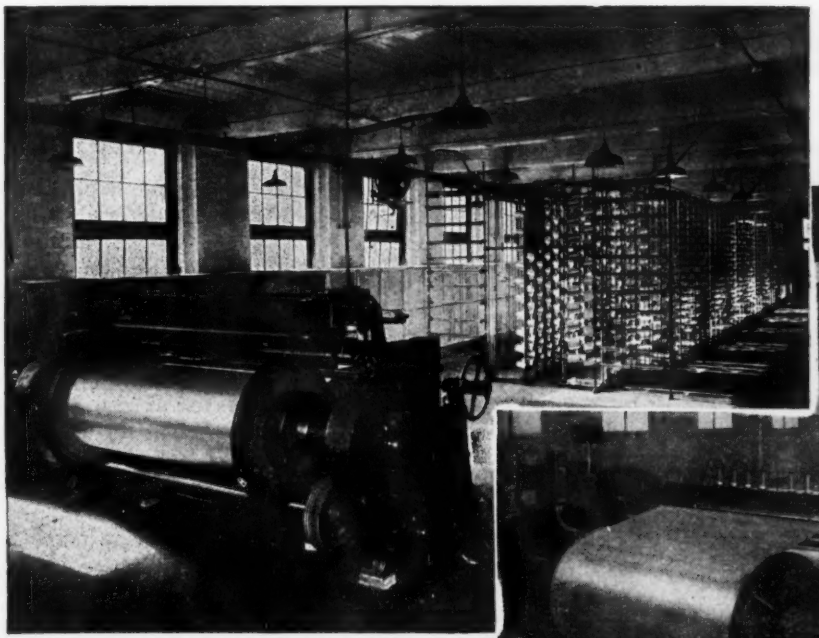

Illustration Shows
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Illustration Shows
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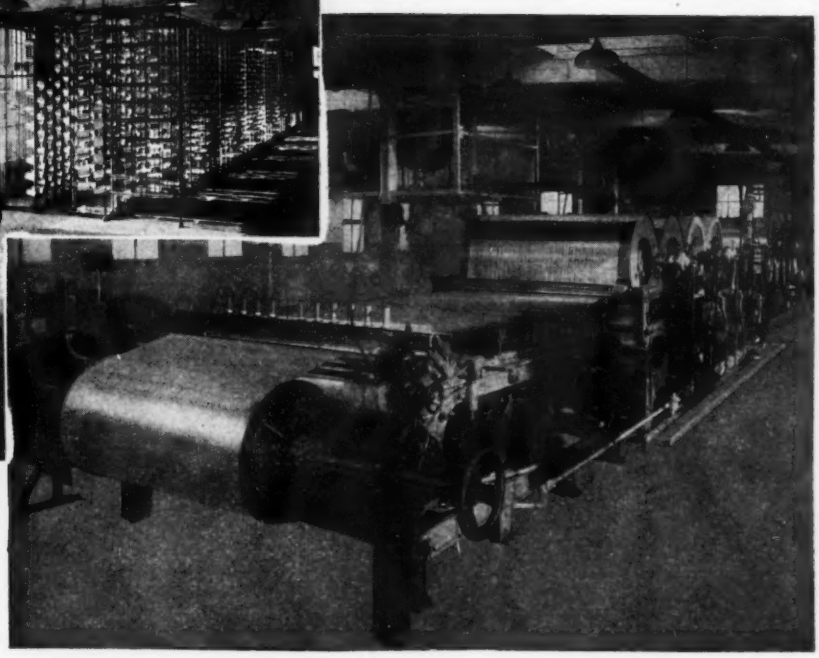

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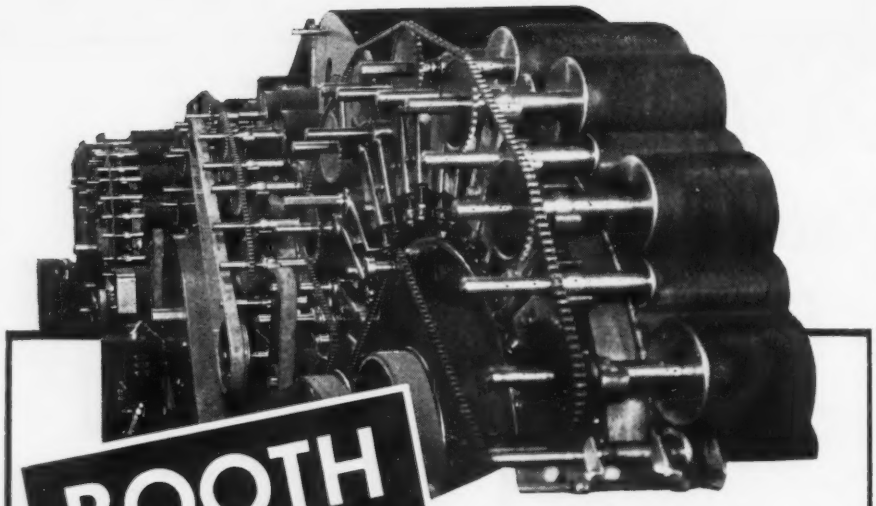

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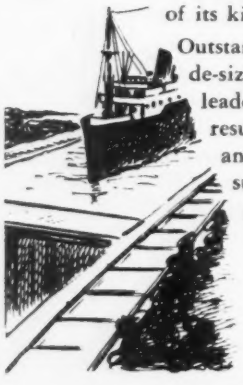

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Job Service for Discharged Service Men

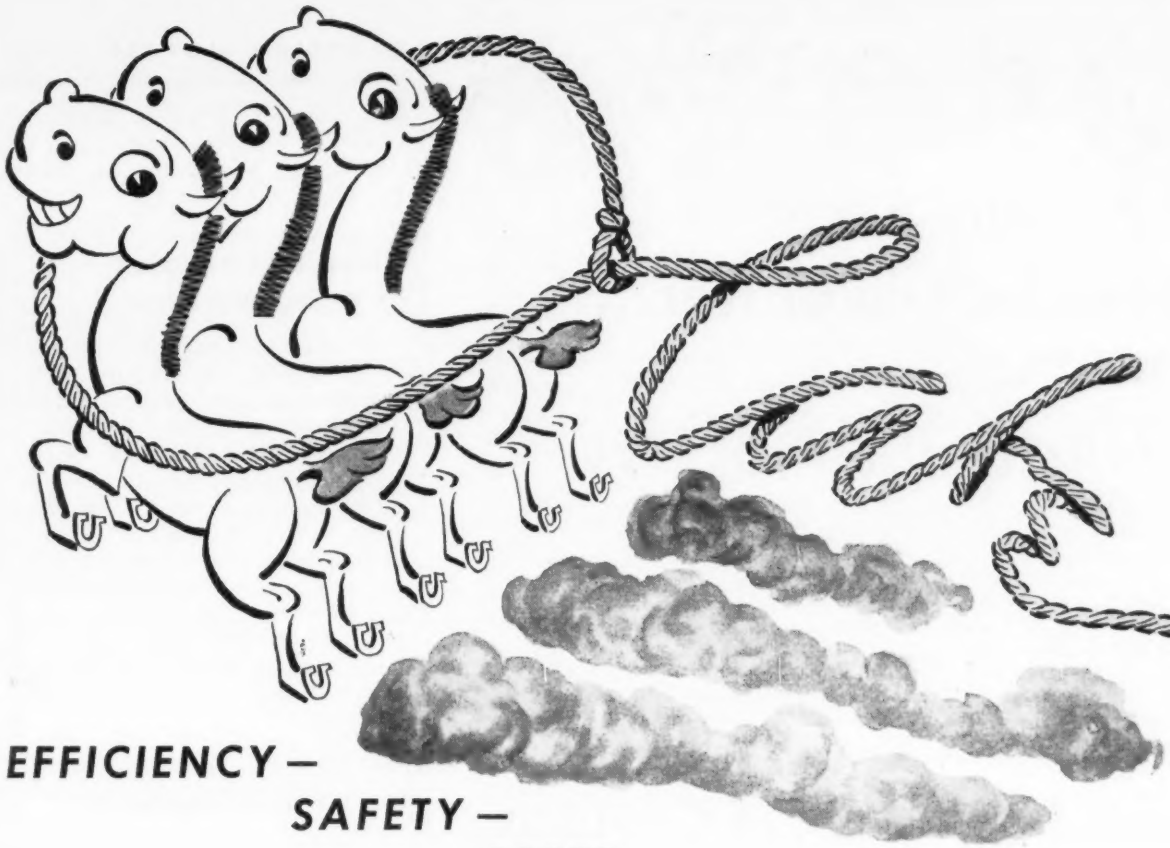
When a man is discharged from any of the armed services and goes looking for work, he will find at the United States Employment Service office in all the major industrial centers with 100,000 population or more, a summary of job opportunities. This summary, designated as Labor Market Information for Veterans, is based on information obtained from employers. It will be revised bi-monthly and will indicate the expected labor demand six months in advance. Of the 11,516 veterans who were the first to apply to this service in January, 6,361 found work immediately.

Suggestion System Works at Viscose Plant

An employee suggestion system recently put into effect at the Nitro, W. Va., plant of American Viscose Corp., is reported to be producing valuable results. To date, 61 awards have been made, seven of which are major awards.

Under the plan, suggestions eligible for an award must be new, practicable and useful. Among topics about which suggestions may be made are improvement in production or handling methods, improvement in quality of products, improvement in tools, equipment and machinery, elimination of waste, and saving in time and materials. The plan is administered by a suggestion committee composed of members of the plant's supervisory personnel. Committee members are Frederic B. Thomas, chairman; Hilda M. O'Dell, secretary; Paul T. Arbuckle, James Crewdson, John W. Moody, Edward A. S. Morse, M. V. Ridenour, John E. Spaulding and Norman S. Welton.

Winners of the major awards are: Donald M. Wires, Okey F. Smith, Lloys M. Chapman, Herbert C. Lan-



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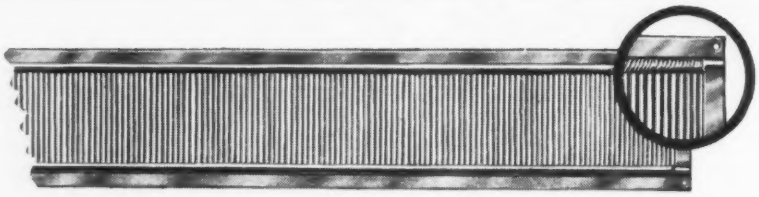

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ders, Robert D. Walters, all of Nitro; Homer E. Wolford, Paradise, W. Va., and George W. Carter, St. Albans, W. Va.

Gives Out Looping to Home Workers

Because many women hosiery-loopers in Reading, Pa., have been forced to leave their jobs in the mills due to responsibilities at home, a plan has been approved by the local office of the United States Employment Service for them to work at home. Since there is urgent military need for cushion sole socks, a Reading hosiery mill was granted permission to have women with seamless hosiery experience loop in their own homes. Machines will be installed and serviced in their homes.

Rocky Mount Issues Paper for Its Service Men

The Rocky Mount Mills, Rocky Mount, N. C., is publishing a little newspaper, *The Riverside Bulletin* for its employes in the armed services. Bugs Barringer is editor.

Pisgah Gets Safety Award

Pisgah Mills, Brevard, N. C., has been awarded a trophy by the Western North Carolina Safety Council for winning first place in Group 4 by having no lost-time accidents in 1943. E. W. Montgomery is president of the mill, and W. M. Melton is vice-president and general manager.

Southern Schools to Cover Cotton Industry

Plans are being made to give nearly 1,000,000 students in 15 States an opportunity to study the cotton industry, "from field to loom," through the cooperation of the education departments of these States. It is hoped to carry the project to 10,000 junior and senior high schools throughout the cotton belt. The broader program is supported by cotton trade leaders after successful completion of the inaugural program in Arkansas last year.

Judson Does Well in Red Cross Drive

Judson Mills, Greenville, S. C., has established an outstanding record in contributing to the 1944 Red Cross War Fund. Through an organization headed by Frank Aiken, assistant sup-

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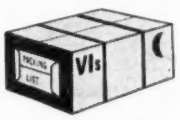

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BOOSTING MORALE

erintendent, the 2,000 employes of the plant contributed $10,157, with the individual donations ranging from a day's to a week's earnings. The total contribution amounted to 40% of the local textile quota in the Red Cross War Fund drive.

Loomfixing for Women

A class in loom fixing, described by Director Louis Greet as the first in the South exclusively for women, is being opened by the Parker school district vocational department, Greenville, S. C. Qualifications of the applicants are experience in weaving and interest in things mechanical. The course is one of a number at Parker to train textile operatives, with the cooperation of mills in the Greenville area.

Proximity Print Works First on Pennant

Proximity Print Works won the pennant for the best attendance in the Cone group of mills at Greensboro, N. C., for the period Feb. 28 to Mar. 25, with a 92.7% attendance. This prize contest between plants and departments was described in these columns last month. The best attendance for department and shift was recorded by the second-shift dyeing at White Oak Mills with 98.6%. The lowest attendance rate was touched by second-shift spinning at Proximity Mills with 70.5%.

National Victory Garden Institute Issues Manual

Realizing the important part employee victory gardens played in alleviating the food shortage last year, and the need for continuing this work, the National Victory Garden Institute, 598 Madison Ave., New York, is distributing a manual to help industry organize and produce employee gardens.

Manhattan Rubber's Victory Gardens Total 400

Manhattan Victory Gardens, the 400-garden project that won the highest award of the National Victory Garden Institute last year, is now under way for the 1944 season, according to officials of The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc., Passaic, N. J. Chairman of the Victory Garden Committee is James J. De Mario, advertising manager of the company.

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And because Genuine Lazenby Parts are manufactured according to specifications and design drawings, correct fit and satisfactory operation are assured.

F. A. LAZENBY & CO.

31 E. Lee St. Baltimore, Md.

Is soap selection a problem for you?

Successful wet-finishing depends, largely, on selection of the right soap for the right job. Armour suggests here some things to look for when picking soaps for three of your principal textile finishing needs.

Fulling of Worsteds and Woolens. Look for a low-titered soap that penetrates quickly, rinses freely. Armour's *Certified* is such a soap. It loosens dirt instantly . . . then, holds it in suspension 'til it can be flushed away, thus preventing redeposit of the soil. The quick and easy rinsability of *Certified* is insurance against objectionable odors. *Certified* is a vegetable fatty acid base soap of medium low titer, available in flakes or solid form.

Cotton and Rayon Cloth Scouring. After-scouring calls for a good high-titer soap that knocks out scum, throwing oils and weaving compounds, then rinses fast to prevent rancidity. Armour's *Flint* is ideal for this job. With a guaranteed titer of 41-42° C., *Flint* gives you active suds at top temperatures. And free-rinsing *Flint* penetrates instantly. You can get *Flint* in either chip or powder form.

Raw Wool Scouring. Raw wool scouring requires extreme care because the grease-laden fibres are delicate and sensitive. So your best choice is a thrifty potash soap like Armour's *Re-Nu*. For *Re-Nu* leaves the raw wool fibres *soft*. It knocks out soil quickly and rinses at once in warm water. *Re-Nu* is an economical low-titer soap that you can get in jelly form.

There's An Armour Soap For Every Wet-Finishing Need!

You can choose from many Armour textile soaps. Each satisfies a particular wet-finishing need. All are made from carefully-selected raw materials and are rigidly controlled during manufacture.

INDUSTRIAL SOAP DIVISION

Armour and Company

1355 WEST 31ST STREET • CHICAGO 9, ILLINOIS

To save peroxide, use Star Brand Silicate as the bleaching assistant. Its purity adds extra stability to the bath, more evenly controlling the release of the oxygen. Its reserve alkalinity counteracts acid products.

Low dilutions which "break" ordinary silicates have no effect on Star, for there's nothing in this quality silicate to precipitate. Baths made up with Star have been known to stand up for a year.

Change to Star now and conserve your bleach.

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PQ SILICATES OF SODA

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Falls Yarn Mills

WOONSOCKET RHODE ISLAND

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STANLEY PORTER

NEW YORK

257 4th Ave.

FOR THE ASKING

(Continued from page 148)

acetylene welding, and electrical resistance welding. It offers general information on the welding of Pluramelt steels.

12. **A turbine ventilator,** sold under the name Coni-Vane, is described in a folder by the Allen Corp. The folder presents a practical treatment of ventilation problems and offers solutions. Sketches show how the turbine ventilator operates, and specifications of ventilators from 6 in. to 48 in. are given.

13. **Collection and suppression of dust** in industrial plants is the subject matter of a booklet by The Whiting Corp. The material is written by E. F. Fisher and contains many tables and much technical information. The bulletin is entitled "Practical Pointers on Dust Suppression" and features the use and application of Hydro-Clone dust suppressors.

14. **"Rayon Warp Sizing"** by H. Marsden is a feature of the March issue of the *Rayon Warp Sizing Specialist* published by Charles B. Johnson Machine Works. The article includes numerous humidity figures for use when processing rayon yarn.

15. **"News-Making Textiles"** is the title of the March issue of *The Pioneer* published by the Niagara Alkali Co. Plastics, luminescent fabrics, electronics, and glass fiber are among the subjects briefly discussed in relation to textiles.

16. **Bellows,** many of which are used in textile plant control, are described by Cook Electric Co. in a 40-page booklet. The "Spring-life" bellows is featured.

17. **Overhead handling of textiles** is featured in the March issue of *The Swirling Column,* published by the American Monorail Co. A two-page spread shows ten views of overhead handling as applied to textile plants.

18. **Installations of infra-red drying equipment** are pictured in a recent release by The Fostoria Pressed Steel Corp. entitled "Good Things Often Come in Small Packages." Many different installations are pictured or sketched, a number of which apply to textiles. The booklet mentions that this investigation has discovered that hundreds of installations of infra-red equipment are less than 25 kw. connected load.

19. **Synthetic rubber aprons** that can be delivered immediately are described in Issue No. 121 of the *Davis & Furber News.* The same folder includes information on D & F cards and Simplex frames.

20. **Flexible couplings** for installations where space is limited are described in Bulletin No. 446, by Farrel-Birmingham Co., Inc. The bulletin is entitled "Farrel Manager Couplings" and gives many sketches and photographs of this specialized equipment in addition to tables of specifications.

He's Our Boss NOW

Uncle Sam is getting all of our production efforts for the duration of the War.

But our research and development work is still going ahead and you will profit by its results in greatly improved machines for yarn throwing, as soon as peace returns.

U. S. ACME TWISTERS FOR SPOOL OR HEADLESS PACKAGE

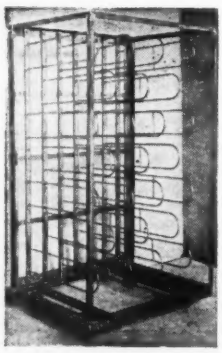
U. S. JUMBO FACE DRIVE TWISTERS FOR LARGE HEADLESS PACKAGE WORK

U. S. ACME DOUBLER TWISTERS—LARGE PACKAGE

U. S. REDRAWS AND SPOOLERS

U. S. TEXTILE MACHINE CO.

SCRANTON, PENNSYLVANIA, U.S.A.



RAYON or NYLON
CAKE TRUCK

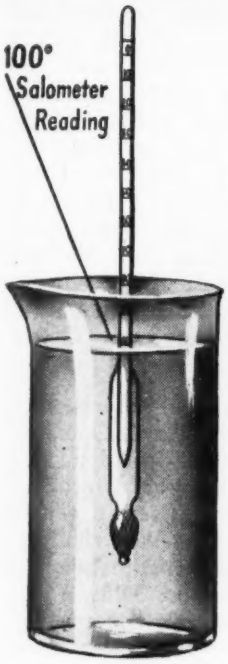
Simplifies steaming of cakes and increases yarn handling efficiency.

Trucks made to order to fit your own ovens in capacities from 75 to 98 cakes. Polished brass arms hold and protect the yarn cakes. Strong easy rolling casters assure free movement of truck from oven to machines. What are your needs—Let us serve you.

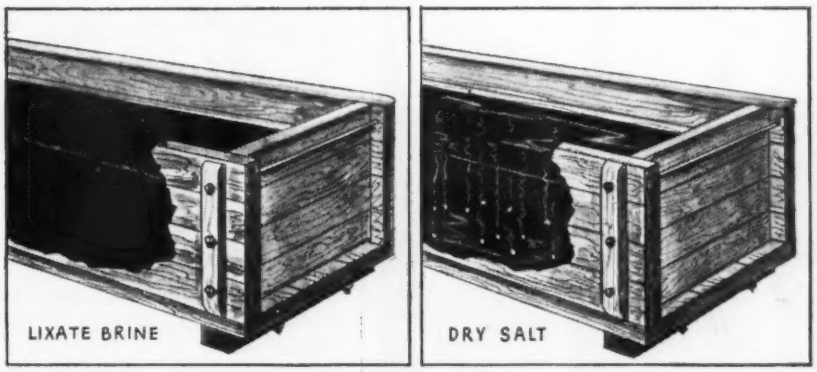
Write for prices now.

Wayne Manufacturing Co.
Honesdale, Pa.
Manufacturers of Textile Mill Supplies

QUICK CHECK ON THE SUPERIORITIES OF LIXATE BRINE

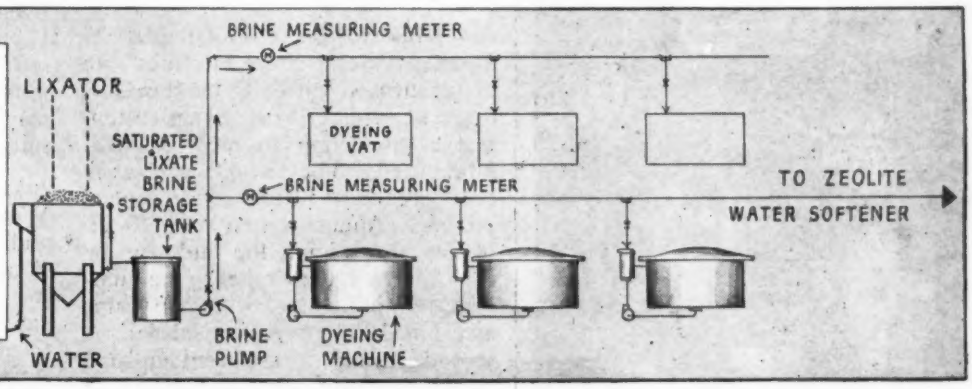


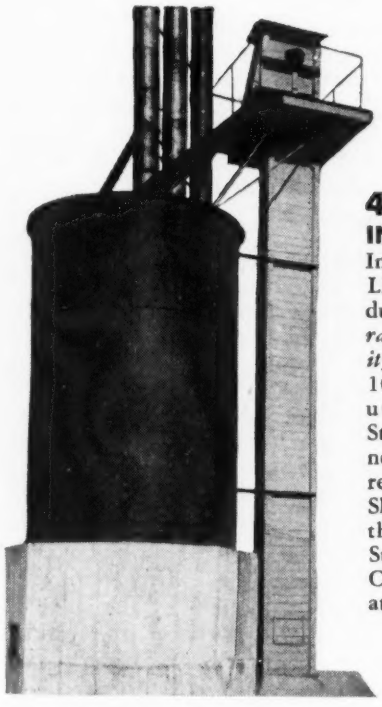
1. SCIENTIFIC CONTROL of desired brine strength in the dye bath is assured when you start with Lixate—*the 100% saturated* brine. In contrast with ordinary brine . . . a salometer reading will always give proof of Lixate's 100% saturation. Make tests at any time—a definite volume of brine draw-off always means a definite quantity of salt.



2. DISPERSING EVENLY throughout the dye solution because it is liquid, Lixate Brine cannot cause local over-concentration. Being *100% saturated,* too, there can be no undissolved salt grains as in "dry salt" operations. Thus Lixate Brine eliminates spotting, streaking and white edges. Furthermore, its crystal clarity is assurance against the presence of gritty sediments or impurities which can cause off shades, spots and machine wear.

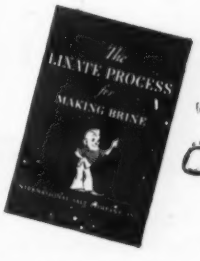
3. INSTANTLY ON TAP . . . Lixate Brine eliminates production interruptions. Piped to wherever you use brine in your plant, it saves time and labor usually wasted in transporting dry salt and mixing brine.





4. AUTOMATIC SAVINGS are yours with International's exclusive Lixator for automatic production of *100% saturated* brine of *crystal clarity.* It cuts costs . . . using 10% to 20% less salt; utilizing inexpensive Sterling Rock Salt. And no heavy investment is required on your part. Shown here is the Lixator that's cutting costs for Standard-Coosa-Thatcher Co. in their modern plant at Chattanooga, Tenn.

SALTY SAYS:



Get this new edition of the Lixate Process for making brine. It's Free! Send for your copy today. This 36-page, fully-illustrated booklet will give you the facts on achieving level dyeing while cutting production costs. It's crammed with valuable brine tables, diagrams, formulas, types of installation.

The **LIXATE** *Process*
Reg. U. S. Pat. Off.
for making brine

INTERNATIONAL SALT COMPANY, INC.
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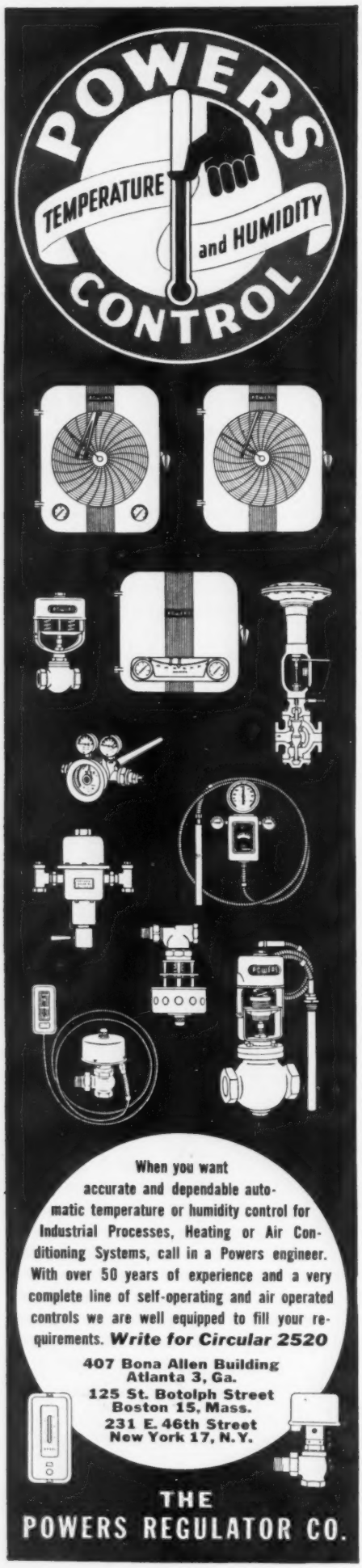
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THE
POWERS REGULATOR CO.

News of the month

The Duck Situation. Army requirements now call for about 300,000,000 yd. of duck. It is the consensus of the industry that these requirements will not be met. The WPB directive calls for the production of ducks at the level of the first quarter of 1943. During that quarter carpet mills and plush mills were weaving duck, but have since gone from the production of this fabric.

At Work to Boost Production. A number of "emergency measures" are being invoked currently by the Government in order to speed up cotton-textile production to meet essential fabric needs. The 48-hour work week order is the first feature of the general program. Announced on April 10, effective throughout the industry by May 14, the order applies to manufacture and processing of cotton yarns and broad woven cotton fabrics. A second feature is the contemplated rating, or classification system, which will define the relative essentiality of fabrics and mills within the industry. It will be an intra-agency, labor-urgency determination, whereby each fabric and mill will have a rating based on supply and demand. WMC will have the responsibility of getting additional workers to mills with top rating.

The Goal of the Textile Industry. "Maximum production per man and machine hour must be the industry's goal," stated Nathaniel M. Mitchell, president of the Barnes Textile Associates, Inc., at the April meeting of the Association of Textile Technologists in New York. Mr. Mitchell reviewed the major types and classifications of textile machinery which are considered available for postwar inclusion in modernization programs. He also emphasized the importance at all times of personnel relations.

Cotton Week. Response to plans for the third wartime observance of Cotton Week from May 22 to 27 by manufacturers, wholesalers and retailers is running ahead of expectations according to the Cotton-Textile Institute and National Cotton Council, sponsors of the event. Up to early May more than 300,000 posters had been distributed along with 25,000 copies of "Cotton Week News," an eight-page tabloid which emphasizes the wartime role of cotton and describes how uses developed under the stress of war can be transformed into peacetime products. As a tribute to Cotton Week and the cotton-textile industry, the sponsors of National Foreign Trade Week, which coincides with Cotton Week, have voted to set aside one day to be known as "Cotton Day."

Alabama Execs to Hold Discussion by Mail. The Alabama Textile Operating Executives have elected Fred F. Phillips, vice president of Buck Creek Cotton Mills, Siluria, Ala., as general chairman. Elected as vice chairman was Holmes Floyd, superintendent of Mt. Vernon Woodbury Mills, Tallassee, Ala. Elected as associate members of the executive committee were: C. H. Moody, Dwight Mfg. Co.; Fred Lyons, Opp-Micolas; Bob Horsley, Pepperell Mfg. Co.; Ira E. Gunn, Russell Mills. It was decided by the committee that a second "discussion by mail" should be arranged and the results printed in a pamphlet.

Asks More Support for Research. Wm. D. Appel, president of AATCC and chief of the Textile Section, National Bureau of Standards, Washington, D. C., met with the South Central Section of the AATCC in Chattanooga, Tenn., on April 4. Mr. Appel reported on the work of the research committee, and asked for stronger support from the corporate members. William M. McLaurine, secretary-treasurer, American Cotton Manufacturers Association, Charlotte, N. C., spoke on "Crystal Gazing at the Post-War World". Arthur Thompson, of Ciba Co., Charlotte, N. C., provided an entertainment feature by feats of magic.

Fiber Society Meets. Over 71 textile technologists and chemists attended the two-day spring sessions of the Industrial Fiber Society, at Clemson, S. C. Acting dean of the Textile School, R. K. Eaton, members of the faculty, and John W. Wigington of the Cotton-Textile Institute and secretary of the society, were hosts. Papers of general interest included the following: Further Studies on the Maturity of the Cotton Hair by Laura T. Hall; The "Grex" Universal Yarn Numbering System by Dr. A. G. Scroggie; Discussion of the Shirley Analyzer Studies by George W. Pfeiffenberger; Discussion of the Her-

PRINT WORKS MANAGER

A leading textile organization requires the services of an executive capable of managing a large cotton printing and finishing plant. For the man whose background would qualify him for this important position, this is an excellent opportunity.

In order to protect respondents, all replies will be received and read only by top management and will be held in strict confidence. Write:

P-840, Textile World
330 West 42nd St., New York 18, N. Y.

The men in our organization
know of this advertisement.

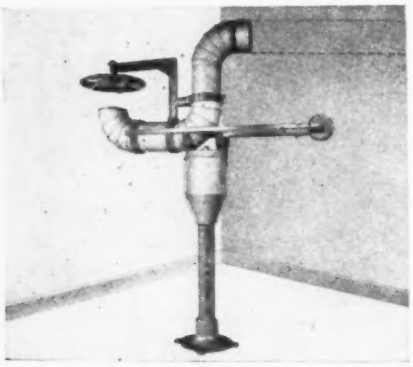
Bring Your Picker Room *up to date*

ATLAS* No. 2 PICKER FEEDER

The use of this Feeder insures a more uniform and continuous feeding of the stock at the desired rate.

FEARNAUGHT MIXING PICKER

Operates on the same general principle as in coarse carding. Made with either metal or wood covered main cylinder, workers and strippers.



TRUSLOW* BLENDER (patented)

Assures a superior mixture of different colors, kinds and qualities of stock. Used with wool, cotton, asbestos and synthetic fibres.

* Registered Trade Mark

Curtis & Marble
MACHINE COMPANY
WORCESTER, MASSACHUSETTS, U. S. A.

tel Fibrograph by Dr. K. L. Herte; and the Determination of Intermediate Product Irregularities in Yarn Manufacturing—the Cause of End Breakage in Spinning by R. W. Vose.

Nylon Prices Reduced. The Nylon Division of E. I. du Pont de Nemours & Co., Inc., has reduced prices on most types and put-ups of nylon yarn to fill military contract orders, 15¢ per pound. The 40/1 Type 100 on bobbins is at $1.90; 40/7 Type 103 on cones, $2.65; 60/1 Type 100 on bobbins, $1.62.

Advances Rayon Staple. American Viscose Corp. has raised price of its standard viscose process rayon staple fiber, in both bright and dull lusters, by 1¢ a pound to 25¢. This restores the price of the bright type to the ceiling level, but the price of the dull type is still 1¢ below the ceiling. Avisco, the higher strength rayon staple fiber, in 1.5 denier and heavier types, is changed from 25¢ to 26¢ while Avisco in 1.25 and 1.0 denier types remains unchanged at the former level of 26¢.

Celebrates 75th Anniversary. Gay Bros. Co., Cavendish, Vt., is celebrating its 75th anniversary. Founded in 1868 by Joseph Stearns Gay, from Mechanicsville, Conn., who went to Vermont for his health, the firm is now in the control of the fourth generation of the Gay family.

To Establish a Carpet Color-Card. Institute of Carpet Manufacturers of America, Inc., has approved a recommendation of its Color Committee to establish a color card for the carpet industry, the card to contain a number of basic colors selected by the Committee's experts in accordance with current style-trends. Manufacturers in other home-furnishing industries (drapery and upholstery, fabrics, wall paper, furniture, lamps) will be invited to collaborate with the carpet industry's program, so that more effective coordination of colors in home-furnishing merchandise can be brought about.

TEXTILE CALENDAR

National Cotton Week, May 22-27.

Cotton Manufacturers Association of Georgia, annual meeting, Atlanta, Ga., May 26, 1944.

Philadelphia Textile Manufacturers Association, 18th annual outing, Cedarbrook Country Club, July 21, 1944.

American Association of Textile Chemists & Colorists, Annual Convention, Claridge Hotel, Atlantic City, N. J., Oct. 12-14.

Gives Boost to American Styles. Citing the American designer as opening new markets for styled cotton garments in the postwar period, Virginia Jewel, fashion director of the Cotton-Textile Institute and National Cotton Council, addressed the annual convention of the Eastern Arts Association in New York last month. She presented a complete cotton style show to illustrate her remarks.

Army Quartermaster Developments. A woolen sleeping bag equal in warmth and protection to two regular army blankets will shortly be issued to troops in the field. This new sleeping bag is made from 21.5 oz., OD, napped, wool cloth. A new, lightweight, multiple-purpose poncho made of coated nylon fabric and weighing 30 oz. will be issued to troops in tropical combat areas. It is so designed that it may be used as a tent, a foxhole cover, or a ground sheet.

Markets Limited. Cotton goods sales for civilians tighten; drive is on for increased production. . . . Wool goods alloted for fall; deliveries however depend upon military needs. . . . Rayon allocations changing; civilian scarcities persist; tire cord program nears completion. . . . Hosiery sales steady; yarn supply paces production. . . . Keen underwear scarcities lie ahead especially in women's and children's goods. . . . Outerwear develops new styles; works to complete immense Army order.

This & That. A method for incorporating a casein content into a viscose rayon thread has been patented by Theodore Koch. (Patent assigned to American Enka Corp.). The product can be dyed with acid wool colors, it is claimed. . . . The accelerated course in textiles and testing techniques held yearly in the main laboratories of the United States Testing Co., Inc., Hoboken, N. J. will be repeated this summer, July 10 to July 28. . . . Announcement of a new line of curtain and drapery fabrics of spun glass, available in 20 colors, has been made by Owens-Corning Fiberglas Corp. . . . Plastic rifle coverings made of Velon can withstand any weather and act as a wear-proof cover for rifles, are a development of the Firestone Tire & Rubber Co. . . . Velon is now being considered as an upholstery fabric for railroad car use and has been demonstrated in a day coach of the Baltimore & Ohio Railroad. . . . An elastic bandage made with elastic Vinyon is now available for medical treatment and sprained angles, varicosities and etc.

WHEN YOU CHECK UP ON YOUR PLANT'S PAY-ROLL SAVINGS PLAN FIGURES!

These days, things change with astonishing speed. The Pay-Roll Savings Plan set-up that appeared to be an outstanding job a short time ago, may be less than satisfactory today.

How about checking up on the situation in *your* plant? Checking up to see if everybody is playing his, or her, part to the full measure of his, or her, ability. Checking up to see if 'multiple-salary-families' are setting correspondingly multiple-savings records.

A number of other groups may need attention. For example, workers who have come in since your plant's last concerted bond effort. Or, those who have been advanced in position and pay, but who may not have advanced their bond buying accordingly. Or even those few who have never taken part in the plan at all. A little planned selling may step contributions up materially.

But your job isn't finished, even when you've jacked participation in your Pay-Roll Savings Plan up to the very top. You've still got a job before you—and a big one! It's the task of educating your workers to the necessity of not only buying bonds, but of *holding* them. Of teaching your people that a bond sold before full maturity is a bond robbed of its chance to return its full value to its owner—or to his country!

So won't you start *checking* . . . and *teaching* . . . today?

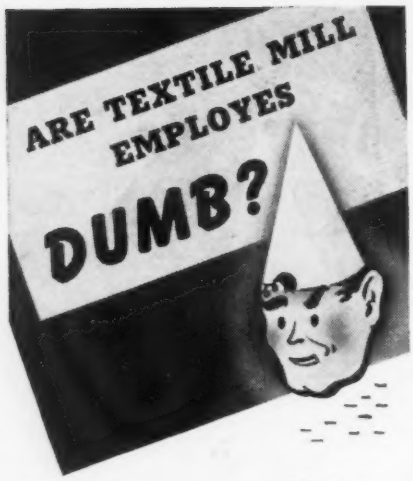
War Bonds To Have And To Hold!

LET'S ALL BACK THE ATTACK WITH WAR BONDS!

The Treasury Department acknowledges with appreciation the publication of this message by

TEXTILE WORLD

This is an official U. S. Treasury advertisement—prepared under auspices of Treasury Department and War Advertising Council



Workers in textile mills have brains, and use them. Fact is, a textile mill—*yours*—can profit from the mental agility of its employes quite as readily as from their manual dexterity.

Uxbridge Worsted Co., Inc., of Uxbridge, Mass., for example, has been using a Morton Suggestion System to stimulate and gather employe ideas on safety, cost-cutting, ways to eliminate waste of time or materials. "We have had the most successful results," they write.

Those words, "successful results," mean more profitable mill operation. They tell why over 10,000 installations of the Morton Suggestion System have been made in the past 15 years. They account for millions of dollars and man-hours saved for industry and business.

Now's the time to act if you are interested in more profitable utilization of *your* man- and woman-power. Write today for full details about how the Morton System fits your operations.

Cabinets like this offer invaluable help to post-war planning programs.

MORTON MANUFACTURING CO.
SUGGESTION SYSTEM DIVISION
355 N. Leamington Ave., Chicago 44, Ill.

Book Reviews

Creep of Textile Fibers Studied

ELASTIC AND CREEP PROPERTIES OF FILAMENTOUS MATERIALS AND OTHER HIGH POLYMERS, by Herbert Leaderman, Sc. D.; The Textile Foundation, Washington, D. C. $2.00.

The important role played by synthetic high polymeric materials in the war effort and elsewhere is due in a large measure to their valuable mechanical and electrical properties. The present work presents a study of a phenomenon—delayed elasticity—which is observed in most high polymers, as well as in other materials. The book gives an account of experiments that have been carried out by the author at M.I.T., under the auspices of the Textile Foundation, on the creep and creep recovery behavior of rayon, nylon, and silk filaments with description of apparatus and many charts indicating results. The experimental results are interpreted in terms of the structure of these materials, and conclusions are drawn concerning the mechanism of elastic and plastic deformation of textile filaments. Similar work which has been carried out with other high polymers is reported and a critical discussion given of relevant theories and of previous experimental work on delayed elastic behavior in other materials, such as glass. A complete index and bibliography adds to the value of the book.

Marks 25 Years for "Cotton Textile Merchants"

25 YEARS, by the Association of Cotton Textile Merchants of New York, 40 Worth St., New York.

This privately printed volume, bound in camouflage cloth, commemorates the 1918 to 1943 period from the founding of the Association of Cotton Textile Merchants of New York. There are chapters on the memorable days of the NRA, the successful promulgation of "The Worth Street Rules," and on World War II. A composite chart of industry statistics from 1922 to 1943 is given, as is also the roster of association members and officers in 1918 and in 1943 with a list of presidents and directors over the years. The publication was prepared under the direction of the president of the association, W. Ray Bell.

Guides Women in Choosing Fabric

ELEMENTARY COSTUME DESIGN, by Featherstone and Maack; John Wiley & Sons, New York; $3.00.

This volume, though focused on the lines and structure of women's costumes, contains chapters on selecting materials, colors, and trimmings and so should interest the textile mill management which is designing and selling goods for consumer home-sewing. Mention is made of the principal fibers and their characteristics and weave and finish are briefly touched upon.

The Community Job Postwar

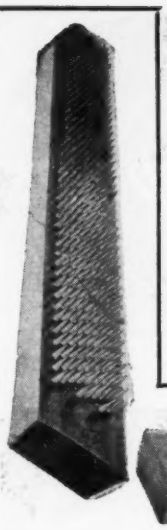
COMMUNITY ACTION FOR POST-WAR JOBS AND PROFITS, Bureau of Foreign & Domestic Commerce, Dept. of Commerce, Washington, D. C.

Analysis of business opportunities in industry and distribution is given the trading area, with points on bringing more farm business to town, is discussed. The application of civic planning to the problem of post-war jobs is considered, and guide sheets to permit close analysis of any particular community are provided.

Sources of Inspiration for Woven Patterns

KENTUCKY COVERLETS and WEAVING AT THE LITTLE LOOMHOUSE, by Lou Tate. Published by Lou Tate, 1725 Third St., Louisville, Ky.

These two books by a devotee of handweaving hold material of interest to textile designers. The first, on coverlets, is priced at 75¢ and contains a wealth of design material from years of research into the home woven coverlets of Kentucky. Nearly 70 designs are illustrated and many others mentioned. The second book is a hand weaving manual indicating how the beginner with a small easily made loom of about 13 in. width can produce a wide variety of useful fabrics and patterns, and covers operation of larger floor looms.



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We purchase steel under rigid specifications from a reliable source of supply. It is then manufactured into pins by our highly specialized machinery, after which it is hardened and tempered before assembly in lags. Thus we can guarantee you lags of *lasting Quality.*

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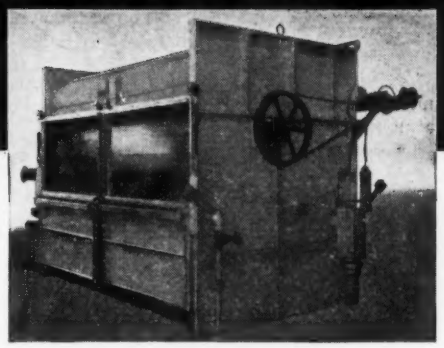
301 THIRD AVE., NEWARK, N. J.

The Flat Line

TYPE TLBT DYE KETTLE
for SPUN RAYONS & BLENDS



Promotes that wool like hand. Extra large drum type reel helps goods balloon, move around and change folds, while Multi-Grip partially knurled surface (Pat. Pend.) prevents slipping.

Wide adaptability and substantial savings in dyestuffs.

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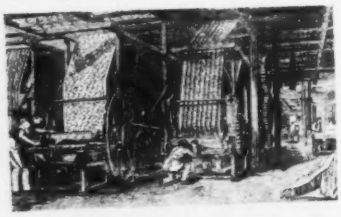
NO. 3 OF A SERIES

The Birth of the Roller...



Before Thomas Bell's time, all printing had been done by means of wooden blocks or flat plates. In 1775, Bell, a somewhat mysterious Scottish gentleman, perfected the technique of wrapping engraved copper plates around wooden rollers, to make a continuous pattern on cloth. Obviously, the importance of Bell's invention hinged on the quick bleaching which was made possible earlier through the discovery of chlorine.

It is thought that Bell's machine was first used successfully in England by Sir Robert Peel in 1785. Though the first machine had one roller, the idea took hold so well that, by 1870, machines using 20 rollers were in operation both in Great Britain and in the United States.

An improvement on Bell's machine was devised by an American, Jacob Perkins, in the early 1800's. He invented a small steel cylinder to press designs on the copper roller—an economical way of covering it with the pattern and increasing the roller's usefulness. This process was introduced by Lockett in 1808, and is still being used for fine fabrics.

Today, Mr. Bell would feel right at home with our printing machines. Though they have more rollers than his original one, they employ the same principle. By his contribution to mass production, the most important economic trend of our times, it may well be said that Thomas Bell "rolled" his way into history.

BURKART-SCHIER CHEMICAL CO.

Manufacturing Chemists for the Textile Industry. In peace and war, our products are always on the job improving the finish of yarns and fabrics.

CHATTANOOGA, TENNESSEE

BURK-SCHIER

PENETRANTS DETERGENTS SOFTENERS REPELLENTS FINISHES

NEWS ABOUT Suppliers

H. W. Butterworth & Sons Co., Philadelphia, has formulated a plan for handling future civilian business to provide for the possibility that the price quoted now may be out of line at the time of manufacture. The plan is to quote the price of the machine, certifying the value of the material and the total amount of labor and burden at the time the quotation is made. In the event that either of these items is less than the originally quoted price at the time of completion and shipping of the machine, the purchaser will receive a credit for the difference. In case there is an increase in either of these two items, the difference will be an additional billing by Butterworth to the purchaser. In this way, both the seller and the purchaser are protected. Orders accepted for postwar delivery are not subject to cancellation.

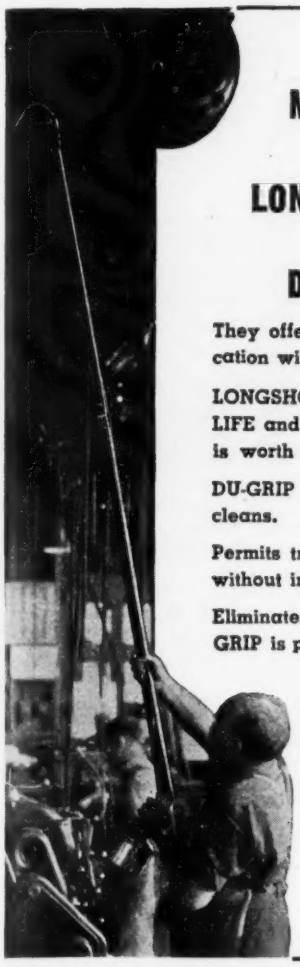
United Knitting Machine Co., Cheltenham, Pa., has been formed with Frank Weisbecker as president. He is the inventor of the Flexy Carrier, a fiber verge plate, and other devices, and has had 20 years of mill experience. Walter Eichenberger, his partner in this new company has been in the trade for over 15 years. At present the company can devote only part of its equipment to civilian work and will make a limited number of round heel widening attachments and a few other necessities for the hosiery trade.

Celanese Corp. of America reports that Truman P. Handy has assumed his duties as a vice president of Celanese Celluloid Corp., the plastics sales subsidiary of Celanese. Mr. Handy has lately resigned as chief rayon consultant of OPA.

Onyx Oil & Chemical Co, of which Edwin Klumph is southern manager, has moved its Charlotte (N.C.) office from 124 East Third Street to new and larger quarters in the Liberty Life Building. The southern staff has been expanded with the addition of B. Uzenoff as technical service representative, and F. E. Schroeder as a member of the southern sales force. Mr. Uzenoff has been connected with the Onyx laboratory in Jersey City, N. J., while Mr. Schroeder was formerly with Commonwealth Color & Chemical Co.

DR. WILLARD HENRY DOW, who found out how to make enough magnesium to produce thousands of fighting airplanes, and enough styrene to supply the needs for synthetic rubber, has been selected to receive the Gold Medal Award of the American Institute of Chemists for the year 1944. Dr. Dow is president of The Dow Chemical Co., Midland, Mich., having succeeded his father, Dr. Herbert Henry Dow, its founder. The medal was presented at the annual meeting of the Institute in the Biltmore Hotel, New York, on May 13.

E. I. du Pont de Nemours & Co., Wilmington, Del., have named the dye works at Deepwater Point, N. J., one of the largest operated by the company, as the "Chambers Works" in honor of Dr. Arthur D. Chambers upon his retirement after 47 years service. Dr. Chambers has been a leader among American industrial organic chemists and was one of the group who pioneered in creating an American synthetic organic chemicals industry and in freeing this country from dependence upon Europe for dyestuffs after the last war. His recommendations led to the establishment 26 years ago of the plant now named for him. He became production manager of the Organic Chemicals Department



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DU-GRIP BELT OIL

They offer lowest-cost method of belt lubrication with maximum safety and efficiency.

LONGSHOT OILER only $15.00. Protects LIFE and LIMBS. The safety feature alone is worth the price. Improves Morale.

DU-GRIP BELT OIL preserves, pulls and cleans.

Permits treating running belts, under load, without interrupting production.

Eliminates belt-cleaning on week-end. DU-GRIP is popular with the textile industry.

LONGSHOT and SHORTSHOT BEARING OILERS also available.

Literature and Booklet, "Better Belt Maintenance" on request.

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3142 Bellevue Road
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ACCURATE
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GEARS
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Any Type
Any Quantity
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THE PLANT THAT QUALITY AND SERVICE BUILT

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REG. U. S. PAT. OFFICE

Package Dyeing Installation, Extracting and Drying in a complete cycle on the same material carrier

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Builders of

Cotton & Wool Dyeing Machines

for

Beams • Packages • Rawstock • Skeins

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Centrifugal Extractors and Driers

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Centrifugal Pumps

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Rayon Cake Dyeing Machines

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Dye Spindles and Perforated Tubes

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STAINLESS STEEL CONSTRUCTION

All Subject to Required Priorities

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INCORPORATED

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Replacement Parts for Existing Machines Can Be Furnished

What do you expect of

Certified Climate?

Are you figuring on stepping up your machine operating speeds?

Do you expect to benefit by higher and more dependable REGAINS; more uniform numbers, of greater strength, smoother and more compact drafting; less waste and fly?

Or — even without an increase in operating speeds, do you figure that fewer stops, fewer piecings, fewer seconds will step up production?

Textile Air Conditioning results most satisfactorily when production men and Certified Climate engineers work together as partners.

Parks-Cramer Company

Fitchburg, Mass. Charlotte, N. C.

upon its formation and held the post until a year ago when he became production advisor.

The Reece Button Hole Machine Co, Boston, Mass., has been awarded the Army-Navy "E" Flag for excellence in war production. Presentation ceremonies took place on April 20.

B. F. Perkins & Son, Holyoke, Mass., has appointed J. Lewis Perkins, who has been president for many years to be also general manager. William Woosnam has been elected general sales manager.

Jacques Wolf & Co., Passaic, N. J., has appointed Charles Hagelgans, who has been calling on the textile industry in Pennsylvania for a number of years, as its representative in and around Philadelphia. He will act as technician and demonstrator.

Boston Woven Hose & Rubber Co., Boston, Mass., reports that A. C. Kingston, vice president and general manager has been obliged to relinquish a large part of his duties because of his health, and has been appointed consultant to the president on matters of sales policy. **H. F. Maxon,** who has been district sales manager of the New York and Pennsylvania districts for the last 17 years, has been appointed general sales manager. **W. I. Lewis,** who has for the last 12 years been assistant to the general manager has become assistant general sales manager. **W. F. Carroll,** who has been resident representative in the Philadelphia district, has been appointed district sales manager succeeding Mr. Maxon.

G. E. HUNT, who has been appointed by Cutler-Hammer, Inc., Milwaukee, as acting manager of the company's Atlanta territory, with offices and warehouse at 134 Marietta Street, N.W., Atlanta, Ga. Mr. Hunt has been with Cutler-Hammer since 1920, serving in the New York, Philadelphia, Cleveland, and Milwaukee headquarters offices and, most recently, as manager of Cutler-Hammer's Indianapolis office.

W. N. WILLIAMS, formerly assistant to the president, Westvaco Chlorine Products Corp., New York, who has been elected vice-president in charge of production. A Westvaco director since 1941, he joined the company in 1924.

Yale & Towne Mfg. Co., New York; has purchased the scale business of the Kron Co., Bridgeport, Conn.

Kali Mfg. Co. has moved to 427 Moyer Street, Philadelphia 25, Pa. The firm is occupying a new group of buildings with full facilities for laboratory, manufacturing departments and executive offices.

Textile Banking Co., New York, has elected Jules W. Schwenker, George E. Ambrose and Joseph B. Funk, to be assistant vice presidents.

U. S. Industrial Chemicals, Inc., New York, announces the resignation of A. J. Wittenberg, vice president of the company and director of the Stroock & Wittenberg Division. He joined the company in 1938 when the Stroock & Wittenberg Corp. became a wholly owned subsidiary of U. S. I. The business of this latter division has been made an integral part of U. S. I. and is now being conducted in the name of U. S. Industrial Chemicals, Inc.

International Nickel Co., New York, has added Dr. V. N. Krivobok, authority on stainless steel and former Professor of Metallurgy at the Carnegie Institute of Technology, to its Development and Research Division. He will be concerned chiefly in the development of markets for alloy and stainless steels, and in assisting steel manufacturers in markets for their post-war products.

National Paint, Varnish, and Lacquer Association, Wash-

BETTER INKS BETTER DELIVERIES

COMPLETE SHIPPING ROOM SUPPLIES

YOUR SHIPMENTS are IMPORTANT

Whatever their destination... **CLEAR ...EASILY READ...PERMANENT STENCILLED ADDRESSED SHIPMENTS** will help to speed and insure their delivery on time. Diagraph-Bradley non-settling, non-clogging stencil and marking inks have been developed through 50 years of research to do the best job of marking for you.

DIAGRAPH-BRADLEY STENCIL CUTTING MACHINES FOR CUTTING LETTERS
½", ¾", ⅞", 1¼", 1½" and 1¾" HIGH
Most export shipments require 1½" letters, or larger

D.B. **DIAGRAPH-BRADLEY**
STENCIL MACHINES
DIAGRAPH-BRADLEY STENCIL MACHINE CORPORATION
NO. 62 DIAGRAPH BRADLEY BUILDING
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WORLD'S OLDEST AND LARGEST MANUFACTURER OF STENCIL MACHINES

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Dependable, speedy and economical de-sizing . . . Our technical staff always at your service.

● *for cottons rayons and mixed goods*

WALLERSTEIN CO., INC.
180 MADISON AVENUE, NEW YORK

CONDENSATE RETURNED TO BOILERS AT HIGH PRESSURE AND HIGH TEMPERATURE

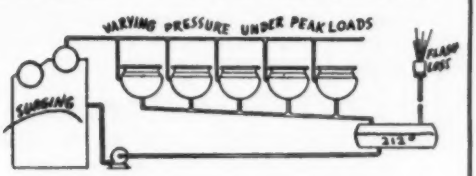
- **INCREASED PRODUCTION**
- **FUEL SAVING**
- **LOWER COST**

By the Cochrane C-B System, condensate is removed from process equipment with automatic and continuous separation and removal of entrapped air and is returned to the boiler at high temperature and high pressure.

Write for Publication 3025.

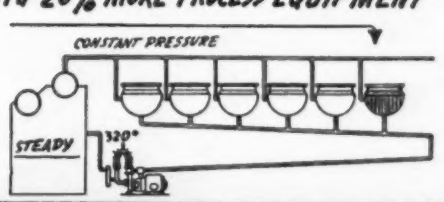
COCHRANE CORPORATION • 3116 N. 17th St., Phila., Pa.

BEFORE



WITH 20% MORE PROCESS EQUIPMENT

AFTER

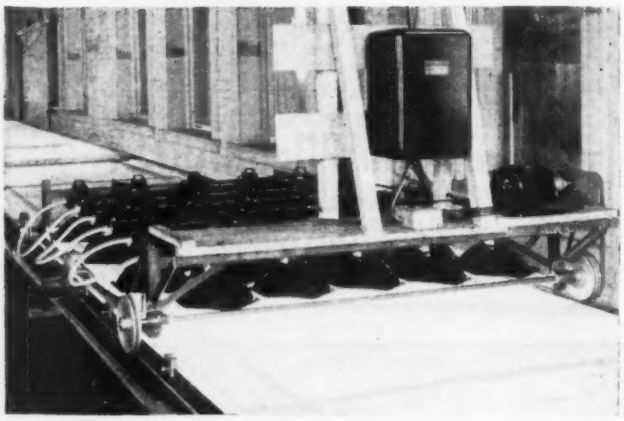


COCHRANE C-B SYSTEM OF HIGH PRESSURE CONDENSATE RETURN

INFRARED *Saves*

TIME **MANPOWER**

SPACE **ENERGY**



A TYPICAL EXAMPLE

Throughout industry, greatly increased efficiency in drying, dehydrating, baking and preheating operations has resulted by utilization of the Near Infrared Process. In the textile industry, one of many installations is pictured above. Here the drying of ink imprints on Koroseal treated table cloths is accomplished in only 1 minute 20 seconds by Infrared. Previous air drying time was 15 minutes. A four-wheel motor driven carrier for a bank of 30 Fostoria Infrared reflectors rolls on a track and travels the length of the 90-ft. table, drying 15 54" x 54" table cloths in 20 minutes—a 91% reduction in drying time.

Advantages tested for your plant

Fostoria Industrial Service Centers, located in major cities, have complete laboratory facilities to test and pre-determine the specific advantages of Infrared in your baking, drying, dehydrating or preheating operations. This service is offered without obligation. Write, now, for full information.

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NEMA

INFRARED EQUIPMENT
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FOR BAKING • DRYING • PREHEATING • DEHYDRATING

Trade Mark Reg. U. S. Pat. Off.

ington, D. C., plans a series of market studies to aid the paint industry in the practical program it has undertaken. "Looking Toward Tomorrow" is the name chosen for the publication by the committee. The committee feels that it is quite possible that the industry will wish to continue the bulletin service into the days when "postwar" will be an accomplished fact.

Pennsylvania Salt Mfg. Co., Philadelphia, has made the following additions to its research and development department staff: Dr. R. D. Evans, formerly with New Jersey Zinc Co.; E. A. Bruce of Blaw-Knox Co.; F. W. Jakob, recently discharged from the U. S. Army; J. L. Staubly of National Association of Dyers and Cleaners; J. M. Swales, of U. S. Navy Inspection Department; J. J. McBride, of Franklin Research Co.; Miss Katherine Dilworth of Delaware County Hospital; and Miss Gertrude Schutze of National Broadcasting Corp.

Veeder-Root, Inc., Hartford. Conn., has elected John H. Chaplin, formerly executive vice-president, to be president, and Graham H. Anthony, former president, has been made president of Colt's Patent Fire Arms Mfg. Co., Hartford, succeeding Samuel M. Stone, new chairman of the latter's board. These changes became effective April 19. Mr. Chaplin was graduated from Sheffield Scientific School at Yale in 1915, and joined the Root Co. at Bristol, Conn., as engineer in 1917. With the consolidation of the Veeder and Root companies in 1928, he became secretary and sales manager. He is also a director of the Holo-Krome Screw and Bristol Brass corporations.

David M. Hadlow has been appointed manager of the Hartford (Conn.) branch office of the Hartford Steam Boiler Inspection & Insurance Co., succeeding Frederic H. Kenyon, who has retired after 34 years' service.

Arnold Hoffman & Co. have purchased a lot adjoining their present property on North Tryon street, Charlotte, N. C., for expansion of the plant as soon as possible.

Gates Rubber Co. has opened a new three-story warehouse at 605 West Fifth Street, Charlotte, N. C. The stock includes V-belts of various types and kinds. The district engineering office of the company is also located in this new warehouse building, with the staff under the direction of R. A. Biggs, district manager.

M. E. CLARK, former manager of market research of Michigan Alkali Co., has returned to Wyandotte Chemicals Corp. as assistant director of technical service and manager of market research. Mr. Clark was granted a leave of absence in July, 1941 at the request of the OPA to accept special duties in Washington, D. C., where he later became chief of the Program Section of WPB.

Charles Bond Co.—John C. Turner, southern sales representative for Charles Bond Co. has opened an office in the Wellhouse Building, Atlanta, Ga.

Monsanto Chemical Co., St. Louis, has appointed C. G. Gress, manager of the Detroit branch office of the Plastics Division of the company since 1940, to be sales manager of the Division's Resinox department. He will transfer to the Springfield, Mass., office. Carl Whitlock, member of the technical service department of the Plastics Division at Springfield, has been named Detroit branch manager in charge of all plastics materials sales in that area.

Flinco Sales Co. has removed its offices to 120 Broadway, New York.

Deering Anderson Co., Boston, Mass., has been formed at 232 Summer Street to conduct a general wool and mohair business by A. Clement Deering and Hjalmar W. Anderson, formerly of the W. H. Crough Co.

China Corp., 29 Pine St., New York, has been appointed as correspondent in the United States for William Hunt & Co., Federal Inc., U. S. A., of Chungking, China.

Detroit Graphite Co., Greenville, S. C.—J. A. McCain suc-

Standardize on

TABER ABRASER

"WEAR CYCLE" TESTS

All fabrics ... cotton, woolen, rayon and silk can be quickly and easily tested and rated in terms of "wear cycles" with the same Taber Abraser. Scientific wear action by "Calibrase" wheels and turn table provide "wear cycles" that are totaled on built-in cycle counter.

Only a small 5"x5" swatch is required for each test which makes it practical to rate the wear quality of every bolt or lot of fabric.

Discover how you can guard against complaints and rejections with the Taber Abraser by writing for Bulletin 4001 NOW.

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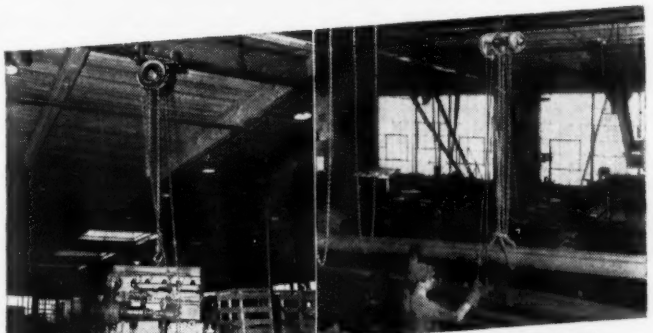
111 TW GOUNDRY STREET, NORTH TONAWANDA, N. Y.

ALFRED SUTER, 200 Fifth Avenue, New York, N. Y.

Eastern Representative

Designers and Builders of Precision and Scientific Apparatus

COFFING HOISTS



Model "YC" Spur Geared Hoist Moving Large Truck Motor

"Quik-Lift" Electric Hoist Speedily Moving Pipe

FOR SPEED

SAFETY

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DURABILITY

Coffing's "Quik-Lift" Electric and Model "YC" Spur Geared Chain Hoists are made to the same rigid specifications as the famous Coffing "Safety-Pull" Ratchet Lever Hoist. In practically all lines of industry Coffing Hoists are playing a prominent part in speeding up construction, production and maintenance.

Write Today for Catalog JG-6

COFFING HOIST COMPANY

Danville, Illinois, U. S. A.

DON'T SWEAT OVER WET PLANT DETERIORATION ...RUST OR FUNGUS

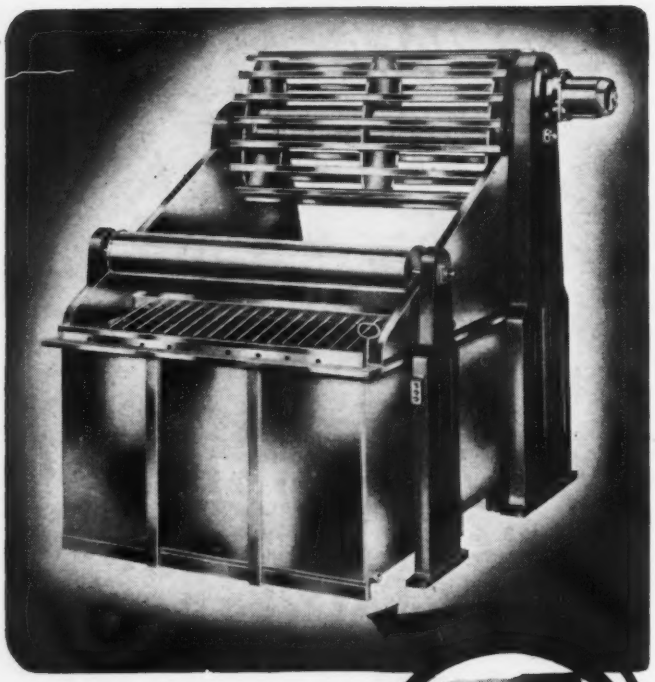
STOP THEM WITH AMAZING DAMP-TEX ENAMEL

The Damp-Tex system of painting stops rot, rust, bacteria and fungus growth. Puts a porcelain-like finish on wet or dry wood, metal, concrete and plaster with equal ease and efficiency. Damp-Tex resists steam, 2% caustic solution and lactic acid. Comes in white and colors. Used in over 4,000 plants. Send for details of our trial offer.

LIQUID PORCELAIN-LIKE DAMP-TEX FOR WET OR DRY SURFACES

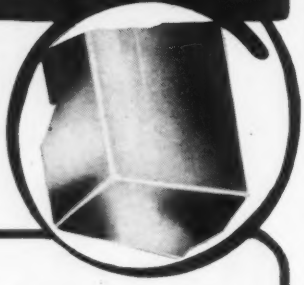
STEELCOTE MFG. CO. • ST. LOUIS, MO.

Canadian Manufacturer: Standard Paint & Varnish Co.—Windsor, Canada.



Stainless Steel Dye Boxes for dyeing woolens, worsted, cotton, rayon and mixtures. Plate #7019.

Round corner construction . . . no crevices into which old colors can seep.



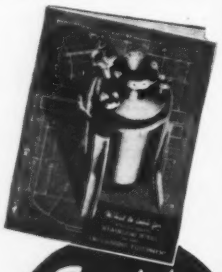
REDUCE COSTLY RE-DYES!

Plan now for BLICKMAN installations after the war—and you'll be certain of meeting tomorrow's competitive market with peak efficiency and production!

For those who now use BLICKMAN stainless steel dye boxes or linings, level dyeing is a matter of a *quick rinse.* Round corners and super-smooth surfaces make it possible to clean the box completely . . . to prevent false shades, discoloration and chaffing.

There'll be no more spotting at time of loading . . . no streaking during dye-operation . . . no stripping or bleaching expense . . . no risk of costly re-dyes *for you* when BLICKMAN stainless steel dyeing equipment is once more readily available!

ALL ORDERS SUBJECT TO GOVERNMENT PRIORITY REGULATIONS



Send for folder "3 for 5" showing BLICKMAN dyeing equipment for new "highs" in post-war production.

EST. 1889

S. BLICKMAN, INC.

405 GREGORY AVENUE • WEEHAWKEN, N. J.

DYE BOXES • LININGS • CYLINDERS • DRY CANS • ROLLS • HOODS • TANKS

NEWS ABOUT SUPPLIERS

ceeds the late John Earl Jones and will cover South Carolina from the Greenville office.

New York & New Jersey Lubricant Co., New York, has elected Joseph H. Bennis as president, to succeed W. F. Kimball, retired due to ill health. Mr. Bennis has been with the company since its organization in 1896 and has been head of its sales department for over 30 years.

S. Duane Lyon, Inc., advertising agency, New York, has appointed Mrs. Minna Hall Carothers as director of public relations. Mrs. Carothers was for 3½ years director of publicity and retail sales promotion of Associated Wool Industries. More recently she has done special organization work for United China Relief, East & West Association and the 1943 Victory Book Campaign. She is a former international president of the Federation of Women's Advertising Clubs of the World, and also former president of the Woman's Press Club of New York, and of Advertising Women of New York, Inc.

Brown Instrument Division of Minneapolis-Honeywell Regulator Co. has placed Al J. McCullough and Jack E. MacConville in joint charge of industrial instrument sales at the Cleveland, Ohio, office.

Bailey Meter Co., Cleveland, Ohio, has elected E. G. Bailey, former president and company founder, as chairman of the board. Robert S. Coffin has been named to succeed him as president. R. E. Woolley was reelected vice president, and J. H. Black, secretary-treasurer.

The B. F. Goodrich Co., Akron, Ohio, reports that Charles W. Staacke has resumed his duties as belting sales engineer after many months on special war assignments as a civilian specialist on rubber problems, during which he saw duty in North Africa, China, Australia, India, New Guinea, New Caledonia, the Solomon and Gilbert Islands.

Owens-Corning Fiberglas Corp. plants at Newark, Ohio, and Ashton, R. I., have been granted a third renewal of the Army-Navy Production Award, entitling them to add a third star to their "E" flags.

General Electric Co., Schenectady, N. Y., reports that orders received during the first quarter of 1944 amounted to $391,901,000 compared with $422,047,000 for the corresponding period of 1943, a decrease of 7%.

WILLIAM C. JOHNSON, who has been general sales manager of Allis-Chalmers Mfg. Co., Milwaukee, Wis., has been elected a vice president of the company. He was placed in charge of general sales in May, 1942, succeeding Walter Geist, who then became president.

E. I. du Pont de Nemours & Co., Wilmington, Del., has appointed Harold Brayman to be director of the Public Relations Department, succeeding the late Theodore G. Joslin, who died April 12. Mr. Brayman has been assistant director of the department since 1942.

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has appointed Russell E. Ebersole as lamp sales manager of the Westinghouse Lamp Division. He will have charge of all all district sales activities of the Lamp Division and will make his headqaurters at the Bloomfield, N. J., plant.

Carrier Corp., Syracuse, N. Y., manufacturers of air conditioning, refrigerating, and heating equipment, has added Dr. William A. Pennington to the research staff of its Engineering Division which is headed by vice-president Herbert L. Laube. Dr. Pennington will devote himself to Carrier's metallurgical and chemical problems, including a number of research projects connected with the company's preparation of new and redesigned products for the postwar period.

C-O-Two Fire Equipment Co., Newark, N. J., has named Carroll M. Snyder as assistant to the president. Mr. Snyder was formerly vice president in charge of Naval Ordnance production at the Herring, Hall, Marvin Safe Co., Hamilton, Ohio.

Wickwire Spencer Steel Co., New York, has appointed Harry E. Roulfs as labor relations manager.

ROVING TRUCK

LANE CANVAS TRUCKS

For the well equipped mill

W. T. LANE & BROS., Inc.
Manufacturers, Poughkeepsie, N. Y.

MAILING LISTS THAT WORK . . .

McGraw-Hill Industrial Mailing Lists are a direct route to today's purchase-controlling executives and technicians in practically every major industry.

These names are of particular value now when most manufacturers are experiencing constantly increasing difficulty in maintaining their own lists.

Probably no other organization is as well equipped as McGraw-Hill to solve the complicated problem of list maintenance during this period of unparalleled changes in industrial personnel. These lists are compiled from exclusive sources, based on hundreds of thousands of mail questionnaires and the reports of a nation-wide field staff, and are maintained on a twenty-four hour basis.

Investigate their tremendous possibilities in relation to your own product or service. Your specifications are our guide in recommending the particular McGraw-Hill lists that best cover your market. When planning your industrial advertising and sales promotional activities, ask for more facts or, better still, write today. No obligation, of course.

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SAFETY LECTURES ARE GOOD, BUT . . .

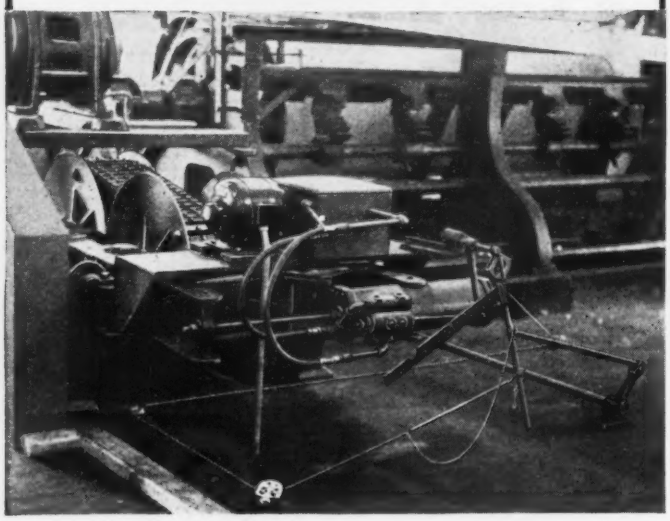
A Bag of *SPEEDI-DRI* is Better

YOU can lecture your employees about the dangers of slipping until you're blue in the face. But a quicker, easier, surer way to cut down the accident-toll from slipping on oily and greasy floors in your carding, picking, spinning, twisting, knitting and weaving rooms is to spread SPEEDI-DRI wherever danger exists. SPEEDI-DRI is a white, granular substance that acts like a poultice for sick, slick floors, completely and quickly absorbing lubricating oil before it can seep through to floor below. SPEEDI-DRI provides an *immediate* non-skid footing that helps to speed production. It is highly fire-retardant. It brightens up the plant, and improves employee-morale, especially among women workers. Write for literature and FREE SAMPLE.

SUPPLIERS: East — Refiners Lubricating Co., New York 1, New York.
Midwest & South — Waverly Petroleum Products Co., Philadelphia 6, Pa.
West — Waverly Petroleum Products Co., Russ Bldg., San Francisco 4, Calif.

SPEEDI-DRI
OIL AND GREASE ABSORBENT

BEAMER OUTPUT *Doubled*



The heavy spindle-driven beamer shown above is driven through a hydraulically controlled REEVES Variable Speed Transmission, which automatically maintains the yarn speed as the beam diameter builds up. A manually operated foot pedal connected to control lever permits operator to bring beamer to slow speed for stopping or starting, or for piecing-up ends, inserting cut marks, etc. This combination of automatically maintained yarn speed and easy adjustment of speed at any time has resulted in approximately doubling output of beamer; also eliminates overtime previously required. REEVES Variable Speed Drives are standard equipment on many different types and makes of textile machines, and one of the three basic REEVES units, shown below, can be economically applied to any driven machine in service. Write for Catalog-Manual WG-419.

REEVES PULLEY COMPANY, COLUMBUS, INDIANA

ACCURATE VARIABLE *Reeves* **SPEED CONTROL**

Left to right: TRANSMISSION provides infinite speed adjustability over wide range, 2:1 to 16:1 inclusive; modern, compact, open and enclosed designs . . . VARI-SPEED Motor Pulley, simple, direct drive for requirements from fractional to 15 H.P.; 3:1 range . . . MOTODRIVE combines motor, speed varying mechanism and reduction gears.

NEWS ABOUT *Men*

Franklin W. Hobbs, president of Arlington Mills, Lawrence, Mass., was reelected chairman of the board of the Textile Foundation, Inc., for the fifteenth consecutive term at the annual meeting of that group in Washington, D. C., April 19. **Frank D. Cheney** continues as treasurer, and **E. T. Pickard**, secretary and assistant treasurer. Research on the competitive position of the American textile industry postwar was authorized, and a committee appointed to study developments in textile education.

Hugh M. Comer, vice president of Avondale Mills, Sylacauga, Ala., and retiring president of the American Cotton Manufacturers Association, donated a trophy for best safety record achieved annually among the mills in that association. He also donated a similar award for best safety record among mills in his own State who are members of the Alabama Cotton Manufacturers Association.

Wm. N. Nixon, president of the Atlanta Woolen Mills, Atlanta, Ga., has been elected a member of the advisory board of the Citizens and Southern National Bank, Atlanta. He succeeds his father.

R. C. Anderson, president and treasurer of the Carolina Process Co., Mount Holly, N. C., has been appointed a member of the National Association of Manufacturers' Committee on Veterans' Employment Problems.

Harry Riemer, for 27 years dry goods editor of the *Daily News Record*, New York, has been appointed editor of that paper effective about June 1 on his return from a six-week combination vacation and business trip to the Pacific Coast. **H. S. Shaps** is now editor of dry goods merchandising.

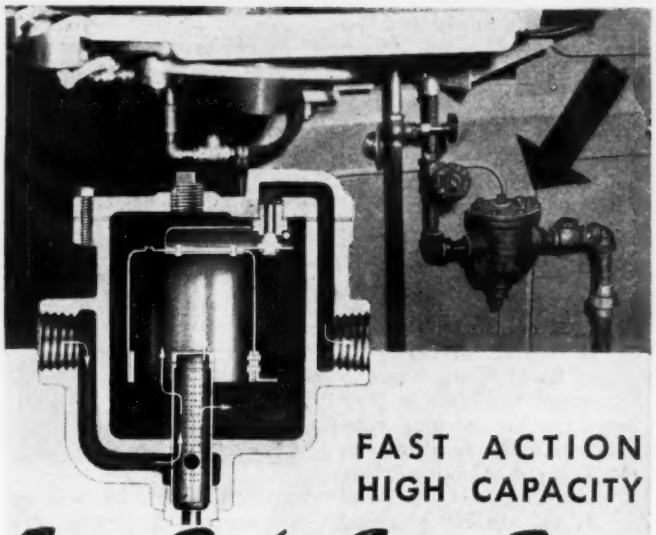
Reginald L. Whitman, vice president, Nashua Mfg. Co., New York, has been appointed consultant and acting associate price executive to the Primary Products Price Branch, OPA's Consumer Goods Division.

Alfred Jepson, formerly president of Savona Mill, Charlotte, N. C., has been appointed to head the Textile Section of the WPB in the Southeast under Regional Director, **Harry G. Thornton,** at Atlanta, Ga.

Henry H. Bitler and **Dr. Frank H. Reichel** have been elected directors of the American Viscose Corp., New York. Mr. Bitler is manager of acetate rayon and Vinyon production for American Viscose. Dr. Reichel is president of Sylvania Industrial Corp., Fredericksburg, Va.

C. M. Patterson, secretary of the Chicago Yarn Men's Club.

C. F. H. JOHNSON, president of Botany Worsted Mills receives Legion of Merit (as reported last month): Left to right Lt. Gen. R. Lee Bullard (retired); Maj. Gen. T. A. Terry; Lt. Gen. George Grunert, commanding Eastern Defense Command; Col. Johnson; Brig. Gen. R. T. Mills, U. S. A.



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HIGH CAPACITY

Sarco Bucket Steam Traps

This trap removes condensate from steam supply lines to pumps, engines, turbines and separators and is preferred by laundries, textile, and plastic industries. It can be adapted to the highest commercial steam pressures and temperatures and can be inspected without disturbing pipe connections. Integral strainer protects the mechanism. Sizes ½ to 2", pressures up to 900 lbs. Ask for Catalog No. 350.

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SARCO CANADA, LTD., 85 Richmond St. W., TORONTO, ONT.

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Points to remember
Buy War Bonds and

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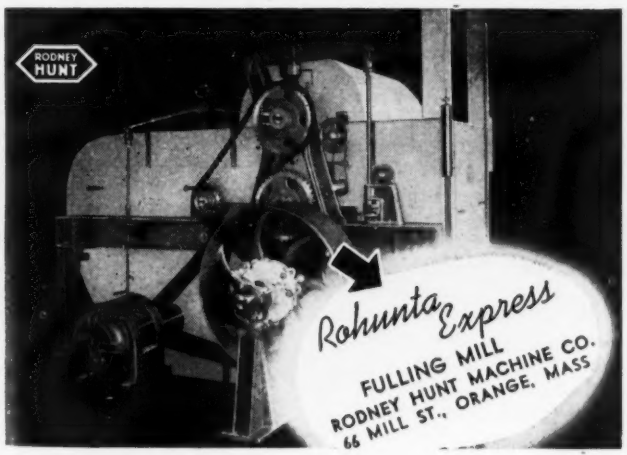
ALLEN COMPANY.

CONSERVE YOUR BEAMS!
STACK THEM don't PILE THEM

ALLEN COMPANY, 136 River Road
New Bedford, Mass.—So. Rep.
Mr. L. E. Wooten, Fort Mill, So. Car.

4



She's the toast and boast of every one of America's men in uniform. Some day they will come home to her . . . to her and all she stands for.

The hearts of all America's women-in-waiting beat high with hope for the future . . . and to them we make this pledge: to help keep them at their loveliest, *DuraBeau* Finishes, then as now, will bring to their Fibres and Fabrics alluring beauty, soft daintiness and long service life.

DuraBeau FINISHES
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SCHOLLER BROS., Inc., Mfrs. of Textile Soaps, Softeners, Oils, Finishes — Collins & Westmoreland Sts., Phila. 34, Pa.— St. Catharines, Ont., Can.

TASK FORCE

The success of a naval task force is a tribute to the courage and skill of the men in Navy Blue—traditional color of a proud uniform.

Performing an important task in the preparation of Azo dyes for Navy Blue—is SOLVAY Sodium Nitrite. This pure, free-flowing crystal is especially suited for manufacturing dyes and for textile dyeing. For dyes that won't die—specify SOLVAY Sodium Nitrite—and be sure of highest quality!

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SODIUM NITRITE

OFFICIAL U.S. NAVY PHOTO

NEWS ABOUT MEN

Chicago, Ill., has notified members that the regular golf tournament will again be postponed because of the war. The members hope that the conclusion of the war may give the opportunity for a "bang-up" tournament next year.

H. B. Snader, treasurer of Vanity Fair Mills, Reading, Pa., is treasurer of the newly formed Brand Names Research Foundation organized in New York. On the executive committee is **A. R. Kneibler,** vice president of Coopers, Inc., Kenosha, Wis. On the board are **T. H. Mueller,** president of Julius Kayser & Co., **John Wyckoff Mettler,** president of Interwoven Stocking Co., **Ernest L. Olrich,** president Munsingwear, Inc.; **Theodore Friedlander,** vice president of Phoenix Hosiery Co.

George F. Haigh has succeeded **Henry Walton** as vice president and superintendent for George Mabbett & Sons Co., Plymouth, Mass. Mr. Haigh was formerly agent for several years at Yorkshire Worsted Mills, Inc., Lenni Mills, Pa., and also agent of the Puritan Mills, Plymouth. Mr. Walton has retired after 40 years with the Mabbett plant.

Dr. William P. Jacobs has resigned as executive vice president of the South Carolina Cotton Manufacturers' Association. Dr. Jacobs is relinquishing this and other official relationships with the cotton-textile industry because of his health. However, he plans to continue to direct important activities pertaining to the industry, but as a free lance. He is president of Presbyterian College and head of the Jacobs Press, of Clinton, S. C.

Arthur E. McElfresh, active in advertising for many years, has been elected a vice president of both North American Rayon Corp. and American Bemberg Corp., New York.

Robert J. Marx, with Scheuer & Co., New York, for the last 13 years, has been named secretary and sales manager of the W. Warren Thread Works, Inc., Westfield, Mass.

W. B. Davis of Newnan, Ga., was elected president of the Atlantic Cotton Association at the closing session of the annual convention in Greenville, S. C., April 1, 5 and 6. He succeeds **Charles W. Shepard, Jr.,** of Gadsden, Ala.

HAROLD J. LEYDON, who has been appointed general sales manager of the North Star Woolen Co., Minneapolis, Minn. He joined North Star in 1927, and since 1941 has served as manager of eastern sales, with headquarters in New York where he will still be located in his new capacity.

Brooks Darlington, sales production manager of the Nylon Division of E. I. du Pont de Nemours & Co., on loan to the Government, has become deputy to the Director, Domestic Branch, Office of War Information, Washington, D. C., following service as special consultant with the Purchase Division of the War Department's Services of Supply.

Frank Cunningham, Greenville, S. C., has been named superintendent of the Woodruff, S. C., plant of Mills, Mills, succeeding **John E. Reeves,** who was elected vice president of the mills, **John Smith** succeeded **F. W. Tate,** as overseer, who was transferred to the Greenville plant in a similar capacity.

J. B. Powell, former vice president of Portland Woolen Mill, recently purchased the Parish Woolen Mill, Stayton, Ore., which is manufacturing blankets for the Government, from **R. D. Parish.**

W. B. Guard, of Eugene, Ore., has been appointed as a member of the Oregon Flax & Linen Board, to succeed **F. L. Chambers,** who resigned recently.

Edward H. Cook, formerly treasurer of Quissett Mill, New Bedford, Mass., recently severed his connection with the business.

Alden H. Burkholder has been appointed assistant research manager, and **Emil**

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CORN STARCHES, DEXTRINES, GUMS, CORN SUGARS & SYRUPS

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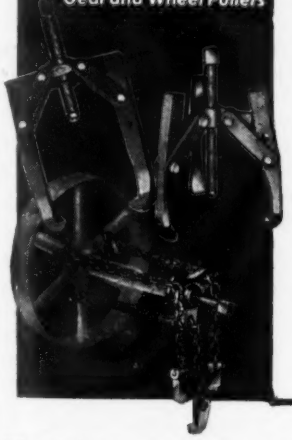
SOUTHERN OFFICES: ATLANTA, GA. - - - - SPARTANBURG, S. C.

John:
Douglas Crown Thin Boiling Starch is made in all fluidity ranges to suit each individual mill's requirements. Let's arrange for a trial order of the type recommended for our purposes.
Jim

ARMSTRONG-BRAY
Gear and Wheel Pullers



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STEELGRIP Standard Rigid Arm Gear and Wheel Pullers are of improved design. Will not slip from work. Arms are forged and heat-treated. 2-arm, 3-arm and special models. 12 types and sizes. CHAINGRIP Universal Pullers pull wheels, solid gears, pinions, etc., even at considerable distance from end of shaft. Proof-tested chains have both chain hooks and special pulley hooks. 3-ton and 12-ton capacities.

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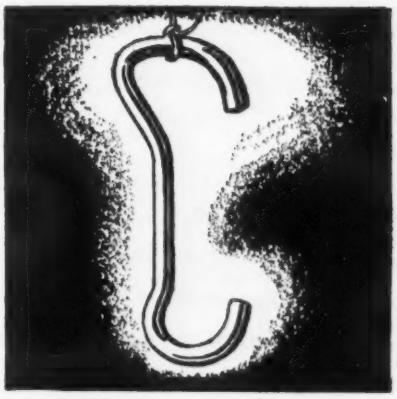
and DRYING
MACHINERY

U. S.
RING TRAVELERS



PERFECT BALANCE
Weighs same on both sides. Straight part of shank is in center of gravity. Distributes lubricant and wears evenly. Will not pivot twisting self and rayon.

The close control in the making of U. S. Ring Travelers is the secret of their long life and their efficient service. With the textile industry still facing huge demands maybe we can tell you a thing or two about Ring Travelers that will help you. What are your problems?

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Bowen Patented Bevel Edge
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U.S. RING TRAVELER CO
AMOS M. BOWEN
President and Treasurer
PROVIDENCE RHODE ISLAND

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1852-1944

During 92 years The William Whitman Company, Inc., and its predecessors have served the interests of important mills and users of yarns, seeking to establish for its customers a steady flow of dependable, quality yarns.

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NONQUITT MILLS
NEW BEDFORD, MASS.

Cotton and Spun Rayon Yarns, Merino Blends, Specialty Rayon and Wool Mixtures.

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NEWS ABOUT MEN

Kline, chemical control manager, of Industrial Rayon Corp., Cleveland, Ohio. Mr. Burkholder has been with Industrial since 1929, and contributed substantially to the development of the company's continuous process. Dr. Kline joined Industrial in 1941 after some 16 years experience in the various phases of rayon cellulose technology.

Arthur L. Erlanger, sales manager of North American Rayon Corp., New York, and its predecessor corporation since its inception, resigned as of April 1. He has been succeeded by **Robert B. Steere**, who has been assistant sales manager of the company for the last seven years.

E. D. Johnston, formerly at North Vassalboro for American Woolen Co., has been made resident manager of the Webster, Mass., plant to succeed the late A. H. Eddy. **Herbert Smith**, superintendent at Webster, has been made resident manager at North Vassalboro.

Charles H. Henkels has resigned as a textile engineer for Talon, Inc., and has become assistant director of the Laboratory Division serving Amoskeag, Brookside, Greenville, Jaffray, Warwick and Wellington Mills, at Boston, Mass.

R. Foster Howell has been granted leave of absence as field agent of the Cotton-Textile Institute to work with the American Cotton Manufacturers Association aiding mills in their dealings with the War Labor Board. Mr. Howell has been appointed as industry member of the fourth regional of the WLB with headquarters at Atlanta, where he has offices with the Cotton Manufacturers' Association of Georgia.

Dr. James Edward Mills, chief chemist for Sonoco Products Co., Hartsville, S. C., was the winner this year of the coveted Herty Medal, awarded annually in honor of the late Dr. Charles Herty for outstanding work in chemistry. The medal will be presented at Milledgeville, Ga., May 6. Dr. Mills has been with the Sonoco company since 1934.

Arthur E. Richter, lately with Arthur Hafela Co., is now with the hosiery department of Iselin-Jefferson Co., New York.

Raymond Mace has been appointed technical director in charge of quality control at

CLYDE HAYES, who has left the Van Raalte Corp. to join the A-Q Mills, Timmonsville, S. C. Mr. Hayes entered the tricot business in 1916 with William Wuerdeman Textile Co., Sidney, N. Y. From 1927 to 1931 he was with Kingsboro Silk Co., and since 1931 he has been with Van Raalte, at both the North Tonawanda and Saratoga, N. Y., plants.

Manville Jenckes Corp., Manville, R. I. He has been with the Manville plant 25 years, in charge of laboratory.

James H. Winter, controller of Nashua Mfg. Co., Nashua, N. H., spoke on "Accounting for the Accrued Cost of Exhaustion or Wear and Tear," at a recent meeting of the New Hampshire chapter of the National Association of Cost Accountants in Manchester. He advocated that industries set up reserves for replacement parts in machinery, thus absorbing the cost as required.

Joseph D. Boyd, former representative of an American Federation of Labor union affiliate, has been named director of the newly established personnel department of Melrose Hosiery Mills, High Point, N. C.

A. Craig White has resigned as technical director for the New Bedford Rayon Co., New Bedford, Mass., to join France, Campbell & Darling, Inc., of New Jersey, manufacturers of synthetic resin.

Miss Bernice S. Bronner, recently of the Good Housekeeping Institute, has joined the staff of the American Standards Association, New York. She is also secretary of the American Association of Textile Technologists.

Mrs. Nancy B. Harper has been selected to succeed B. S. Hart, deceased, in charge of Greenville, S. C. office of

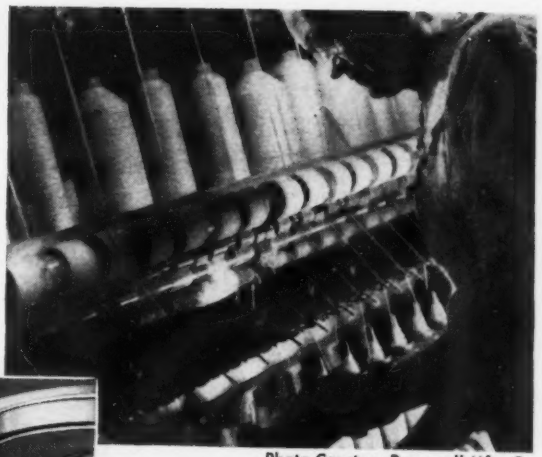
TEACHING the NATION to SEW with COTTON BAGS!

Advertisements in farm papers and home economic magazines, having approximately 8,000,000 circulation, are offering a free booklet of patterns and instructions for sewing with used cotton bags. Distribution of hundreds of thousands of copies of this book to homes and to pupils of sewing classes in schools is not only helping to conserve for war, but is building for the future use of cotton bags.

FREE

If you are interested in receiving this unique booklet, a copy will be gladly sent to you on request. . . . Address NATIONAL COTTON COUNCIL MEMPHIS 1, TENN., P.O. BOX 18

NATIONAL COTTON COUNCIL OF AMERICA
COTTON TEXTILE INSTITUTE



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Rings not only RESTORE but INCREASE production

Repairing machinery by replacing worn rings usually shows a prompt gain of 10% to 15% restored production when using high-polish DIAMOND FINISH standard designs. But in numerous operations you can go far beyond the standard-practice maximum, by means of our exclusive Eadie lubricated styles.

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SPINNING RING CO.
Makers of Spinning and Twister Rings since 1873
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46 Years of Ring Traveler Craftsmanship!

Every Dary Ring Traveler produced in 1944 offers this. Today, as for over four decades, skilled craftsmen are responsible for turning out "superior" Dary Travelers.

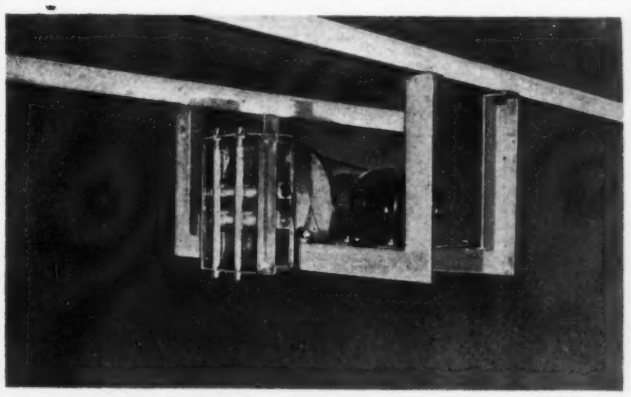
Put this craftsmanship to work in your spinning and twisting departments by trying Dary Ring Travelers NOW!

For immediate help with your "traveler troubles," contact the Dary Representative nearest you today!

THE DARY RING TRAVELER CO.
TAUNTON, MASSACHUSETTS
JOHN E. HUMPHRIES, BOX 843, GREENVILLE, S. C.
JOHN H. O'NEILL, BOX 720, ATLANTA, GA.
H. REID LOCKMAN, BOX 515, SPARTANBURG, S. C.

PROCESSED
SYMBOL OF SUPERIORITY

COOK'S CLOTH DETWISTER
(Patented)



Operates with all makes of Scutchers.
Also in combination with Cook's Cloth Opener.
Opens your cloth from the Rope without the usual Distortion, Stretch and Damage.
Good for lightest rayon or heavy (36 oz.) woolens.
Remove the Twist first, then open the cloth to width.
Reduces beater speeds tremendously.
Cuts machine stops to a minimum.
Saves repair bills on scutcher and mangle.
Detacking operations greatly improved.

Write now for your information

COOK MACHINE CO.
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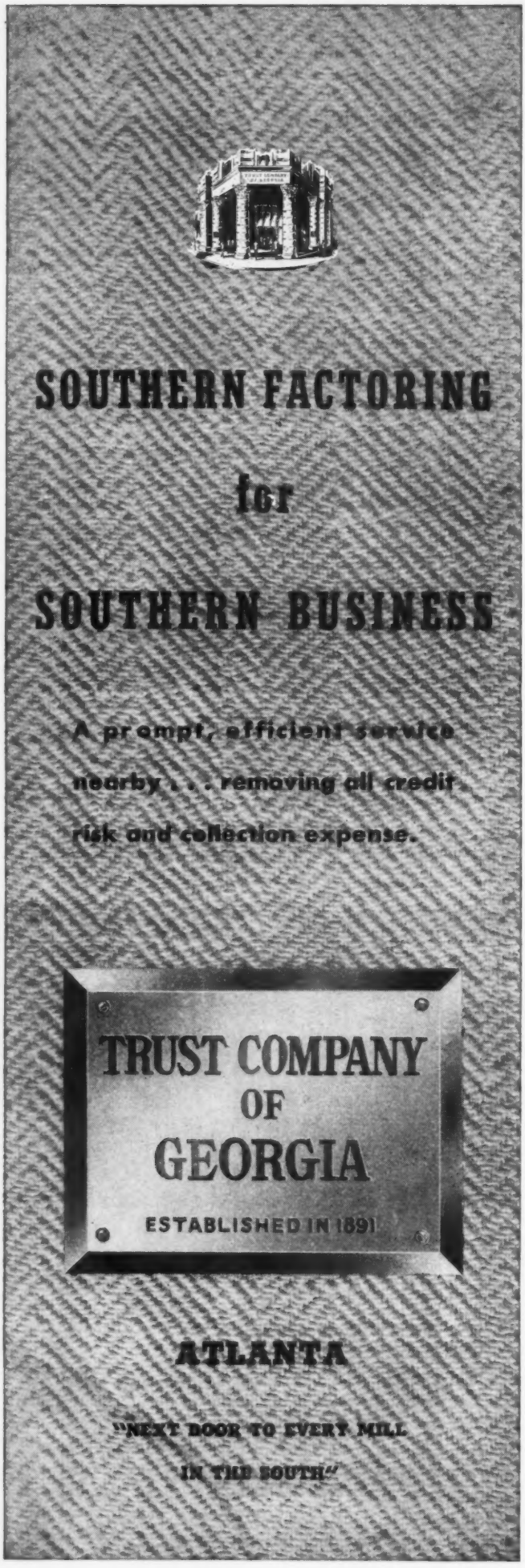
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A prompt, efficient service nearby . . . removing all credit risk and collection expense.
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ATLANTA
"NEXT DOOR TO EVERY MILL IN THE SOUTH"

NEWS ABOUT MEN

North American Rayon Corp. of New York, operating under the direction of **R. B. Steere**, general sales manager. For many years Mrs. Harper has been serving as assistant to Mr. Hart.

John L. Dabbs, former Southern sales manager of the dyestuff division, organic chemical department of E. I. du Pont de Nemours & Co., Charlotte, N. C., retired on April 1 after about 25 years of service.

W. M. Woodham has been promoted to assistant superintendent of weaving at Alabama Mills, Inc., Haleyville, Ala., and **Jollie Hudson** has been promoted to assistant superintendent of the carding and spinning departments of the same mill.

Alex W. Bell has been made superintendent of the Sycamore plant of the Avondale Mills, Sycamore, Ala., and **Homer White** has been made assistant superintendent.

C. E. Sumrall is the new superintendent of McCallum & Robinson, Inc., Memphis, Tenn., succeeding **W. J. Bond**, who resigned to enter the Navy.

C. C. Hope has succeeded **H. F. Hogue**, as manager of the Woodlawn plant of American Yarn & Processing Co., Belmont, N. C., who was transferred to Whitney, N. C., as manager of the company's plant there.

R. L. Hulsey has become superintendent of carding, spinning, warping and slashing at Brookside Mills, Knoxville, Tenn.; **S. B. Smith**, formerly with Gossett Mills, Anderson, S. C., has become general overseer of spinning, and **A. R. Tanner**, formerly of Augusta, Ga., has become general overseer of carding.

D. B. Summer, formerly associated with Riverside & Dan River Cotton Mills, Danville, Va., has become superintendent of Piedmont Cotton Mills, Egan, Ga., succeeding **L. E. Lane**, who has resigned.

A. B. Brown has become superintendent of Mayo Mills, Inc., Mayo, S. C. He was formerly associated with the Harden Mfg. Co., Harden, N. C.

L. P. Haas, formerly assistant to the head of the carding department of Rhodhiss Mfg. Co., Rhodhiss, N. C., has become superintendent of spinning of Aldred Mill, a unit of Granite Falls Mfg. Co., Granite Falls, N. C.

W. F. Crowder has resigned as superintendent of spinning and spooling of Trenton Cotton Mills, Gastonia, N. C., and has accepted the position of superintendent of Spartan Mills, Spartanburg, S. C.

E. A. Johnson, formerly with Martel Mills, Valley Falls, S. C., has become superintendent of the cloth room of Brandon Corp., Woodruff, S. C., plant.

W. R. Steppe, formerly of Spartanburg, S. C., has become superintendent of carding of the Gayle plant of Springs Cotton Mills, Chester, S. C.

Guy M. Vann, superintendent of Aponaug Mfg. Co., Kosciusko, Miss., has resigned to accept a similar position with Forsyth Cotton Mills, Forsyth, Ga.

Odell Harrill, for 18 years paymaster of Stonecutter Mills, Inc., Spindale, N. C., has resigned to take the post of purchasing and employment agent with the Spindale Mills Co., succeeding **Aubrey Thomas**, former employment agent, who has been called into military service. **J. J. Wrenn**, manager of the Rutherfordton, N. C., Rose 5 and 10 Cent Store, succeeds Mr. Harrill as paymaster of the Stonecutter Mills.

Owen Stinnett has become general overseer of weaving at Madison Woolen Mill, Madison, Me. He was previously with the Royal Woolen Co. at Sabattus, Me.

James E. McDonald, of Raleigh, N. C., a graduate in textile engineering from North Carolina State College, has resigned as manager of the Charlotte, N. C., office of the WPB, to resume his connection in the textile machinery field.

J. T. Smith, formerly with Drayton Mills, Spartanburg, S. C., has become first superintendent of the No. 1 weave room, first shift, at S. Slater & Sons, Inc., Slater, S. C. He succeeds **Wade T. Pierce**, who has resigned.

Henry Holland has been made assistant superintendent of Wamsutta Mills, New Bedford, Mass., after 29 years as overseer of carding. He came

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Westbrook, Maine

Cotton yarns, single and ply
Cotton warps, single and ply
Colored yarns and warps
Spun rayon — yarns and warps
Seamless grain bags.

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MANUFACTURER OF
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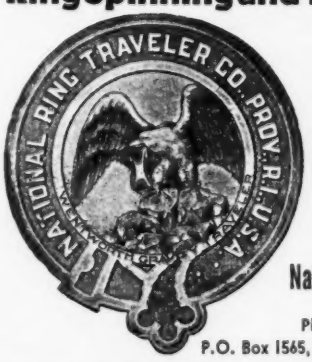

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A New Chemical Treatment
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Greater Production From Twister Frames

Because NON-FLUID OIL does not fly off rings to get on yarn and rails, it prevents blackened yarn. By staying on rings it lubricates dependably and prevents broken ends.

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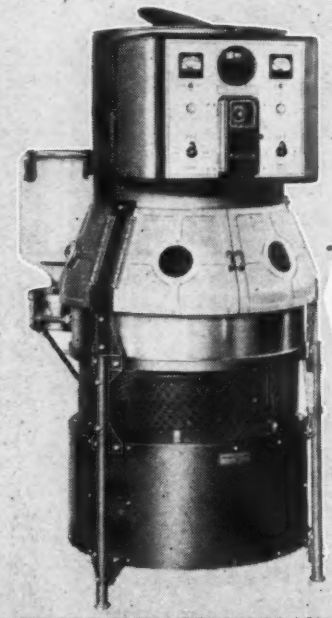
FADE-OMETER

for accelerated color fading



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Specimens are rotated around the Atlas Enclosed Violet Carbon Arc—the closest approach to natural sunlight. Temperature automatically controlled. No loss of light intensity of arc during life of machine.

ATLAS ELECTRIC DEVICES CO., 361 W. Superior Street, Chicago, Ill.

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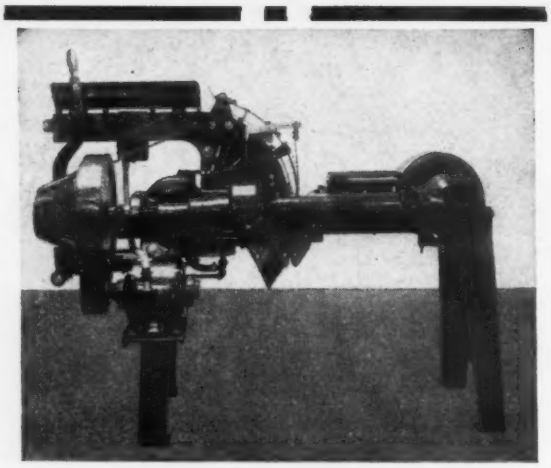

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BOBBIN STRIPPER

HIGH CLEANING CAPACITY
Protects barrel and finish. Usually pays for itself in one year—always within 18 months.

Complete information promptly furnished upon request

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James F. Notman . . . . . Needham, Mass.—N. E. States
E. W. S. Jasper, Inc., Elizabeth, N. J.—Penna., N. J. and N. Y.
Geo. Thomas & Co. . . Manchester, England—European Agt.

to this country 40 years ago, after training in Lancashire mills.

Sidney H. Ballenger, manager of Walhalla (S. C.) plant of the Victor Monaghan Co., is the new president of the local Rotary club.

Marion Wright, Woodruff, S. C., has become an efficiency accountant for Riverside & Dan River Cotton Mills, Inc., Danville, Va.

Frank Bell, tricot technician with the Walton plant of Julius Kayser & Co., has become associated with A-Q Mills, Timmonsville, S. C.

Joseph Urow has become buyer for Albermarle Weaving Co., Inc., Charlottesville, Va., succeeding **M. G. Lupold,** who is now serving in the Army.

M. B. Odell has become superintendent of the Glenco Mills, Burlington, N. C.

Claude B. Williams has become superintendent of Travora Mfg. Co., Graham, N. C., having resigned a similar position with Mansfield Mills, Inc., Lumberton, N. C., to accept.

Men in Armed Services

Wm. B. Moore, vice president of Wade Mfg. Co., Wadesboro, N. C., on leave for the duration, who has been stationed at the Charlotte Quartermaster Depot, Charlotte, N. C., since June, 1942, has been promoted to the rank of lieutenant-colonel.

Leroy Springs, 19, son of Col. Elliott Springs, of Fort Mill, S. C., president of the Springs Cotton Mills, recently received his commission as second lieutenant as an Army Air Force pilot at Spence Field, Moultrie, Ga. His father was a fighter pilot during the First World War, and saw military service in the air corps in the beginning of the present war.

Malcolm F. Warren, on leave from John F. Street & Co., of Providence, for whom he was New York representative, was graduated from the Naval Training Station, Sampson, N. Y., recently as storekeeper and awaits assignment to sea or shore duty.

Oliver D. Landis, who prior to entering the service was Carolinas representative for Graton & Knight, has been stationed last winter at the Naval Air Gunnery School, Hollywood, Fla., with rank of lieutenant and has just been transferred to the Naval Air Station at Oak Harbor, Whidbey Island, Wash.

James A. Sherer, secretary and treasurer of Spindale Mills, Inc., Spindale, N. C., is now on leave and has entered the United States Naval Reserve.

Fred B. Bunch, Jr., assistant secretary of Statesville Cotton Mills, Statesville, N. C., has just been commissioned a lieutenant (j.g.) in Naval Reserve.

Humbert Raymond Celentano, textile colorist, who has been with General Dyestuff Corp., New York, since 1934, was inducted into the United States Army at Fort Dix, N. J., March 30.

Ben C. Bailey, before enter the Army connected with Frank G. North, Inc., Atlanta, Ga., has been promoted to the rank of Captain at the Boston Quartermaster Depot, where he is in charge of textile procurement.

R. G. Chatham, personnel manager for Chatham Mfg. Co., Elkin, N. C., since 1940, has resigned to enter the Army and has been succeeded by **C. C. Poindexter.**

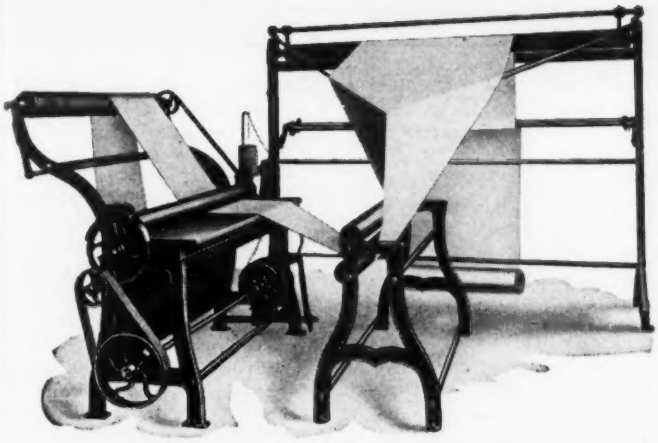
Abner D. Potter, a chemist for Burlington Mills Corp., Greensboro, N. C., is now serving as ordnance officer with rank of captain at a Sixth Air Force base at Guatemala.

Lake Terrell, Jr., former superintendent of Best Mfg. Co., Gainesville, Ga., has been advanced to the rank of major in the army. Currently Major Terrell is stationed at Fort Worth, Tex.

J. J. Love, superintendent of Ware Shoals Mfg. Co., Ware Shoals, S. C., has received a lieutenant's (j.g.) commission in the Navy. He is succeeded at the plant by **George B. Sessions,** who has been assistant superintendent.

C. E. Sumrall is now superintendent of McCallum & Robinson, Inc., Memphis, Tenn., succeeding **W. J. Bond,** who resigned to enter the Army.

Lewis Rice, Jr., of Highland,



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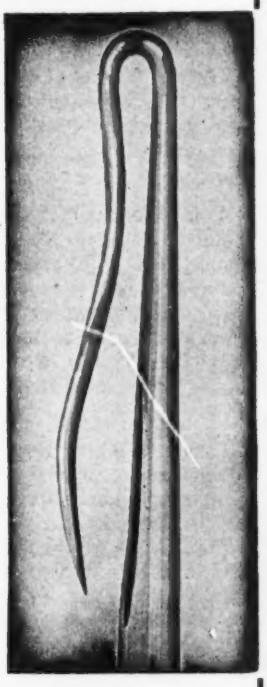
Bennington, Vermont
Manufacturers of
Quality LATCH and SPRING-BEARD

NEEDLES



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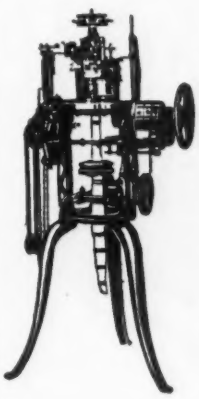
Manufacturers of **THE FAMOUS COOPER CIRCULAR SPRING-NEEDLE RIB KNITTING MACHINES**

Now's THE TIME FOR PLANNING



Do your planning now. After the peace—is too late. Your competition is ready to fight you for your markets. Don't let them get the jump on you—because your plans aren't definite, and well advised.

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Single- and Double-End Types. Collapsible arms on reel, automatic yardage control and improved tension device. Reduced doffing cycle with Twin-Unit System.

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FIDELITY MACHINE COMPANY
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NEWS ABOUT MEN

N. C., who was a chemist at American Enka Corp., Enka, N. C., prior to entering the Army Air Corps in February, 1943, has just graduated from the B-24 Command Pilot School at Maxwell Field, Ala., with rank of first lieutenant and has assumed his duties with the Second Air Force.

Torrey M. Tyner, formerly assistant superintendent of Stonecutter Mills, Inc., Spindale, N. C., before going into service, has been promoted to lieutenant (j.g) in Navy.

Harold E. Dysart, of Old Fort, N. C., who prior to entering the Naval Reserve was a chemist in the nylon division of E. I. du Pont deNemours & Co. at Martinsville, Va., was promoted to the rank of lieutenant (j.g.). He has been serving in the South Pacific for the last 11 months.

Abner D. Potter, of Raleigh, N. C., who prior to entering the service in January, 1942, was a textile chemist for Burlington Mills Corp., Greensboro, N. C., recently arrived at the Sixth Air Force Base in Guatemala, where he is serving as base ordnance officer with rank of captain.

Charles H. Haase, who held the position of superintendent of the unit of E. I. du Pont de Nemours & Co., Richmond, Va., before entering the Army Air Forces, and who is director of the Air Service School at Robbins Field, Macon, Ga., has been promoted to lieutenant-colonel.

Charles F. Goodman, who graduated from Clemson College in textile engineering in 1936 and later was associated with the Self Mills in Ninety-Six, S. C., has been reported missing in action in Italy since Feb. 29. He has been overseas since last August as a first lieutenant.

Peter Ihrie, 27, who was with the Burlington Mills Corp., before induction into the Army Air Forces, and a graduate of the North Carolina College Textile School, has been reported missing in action over Italy following the "failure of the plane on which he was navigator to return."

Obituary

G. Byron Kleppinger, 63, president of Macungie Silk Co., Macungie, Pa., which he founded 35 years ago, died at his home there recently.

Hubert W. Steger, 63, president and treasurer of Paul Knitting Mills, Pulaski, Va., died recently in Richmond, Va.

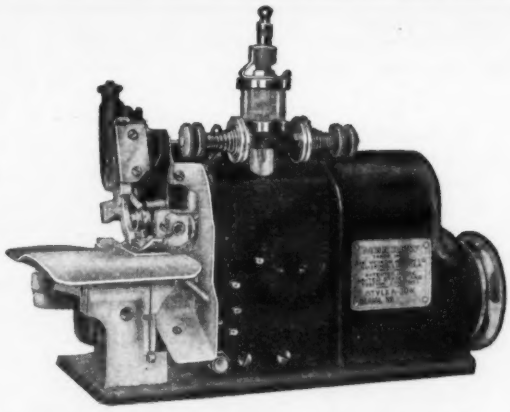
John Shoffner, president of Standard Hosiery Mills, Alamance, N. C., vice president of Acme Silk Co., Watsontown, Pa., and a member of the board of directors of the Sellars Mfg. Co., Saxapahaw, N. C., died recently at Miami Beach, Fla.

George Wilmoth Robertson, 78, former executive vice president and general superintendent of Riverside & Dan River Cotton Mills, Danville, Va., died April 20 at his home in that city. A native of Oldham, England, he came to America as a youth and settled at Columbus, Ga., where he entered the cotton-textile industry. He made a connection with the new mills at Danville in 1884, and participated in their development to a point where, at his retirement in 1941, they were among the largest units in the textile industry.

John C. Brooks, vice president and director of Monsanto Chemical Co. and general manager of its Plastics Division at Springfield, Mass., died suddenly late last month on a train en route from St. Louis to New York.

Augustine H. Eddy, 64, manager of the Webster (Mass.) plant of American Woolen Co., died at Providence, R. I., on March 27. He was born in Chepachet, R. I., and was employed by the company at its Saranac Mill, Blackstone, R. I., in 1902 becoming agent in 1905. In 1911 he established the Nasonville Woolen Co., and in 1913 became manager of the Saranac Mill, becoming manager of the Weybosset Mill, Providence, in 1929, going to Webster in 1938.

Edwin C. Holt, 83, Burlington, N. C., founder and builder of the Delgado Cotton Mills, Wilmington, N. C., president of Elmira Cotton Mills and Lakeside Cotton Mills, both of



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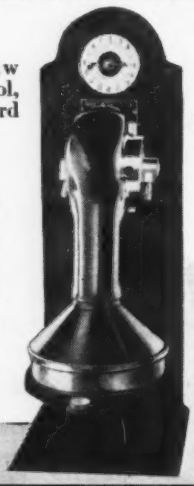

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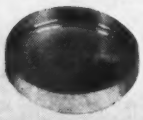

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NEWS ABOUT MEN

Burlington, and who had many other textile interests, died recently.

Thomas J. Sturtevant, president of Sturtevant Mills, Boston, Mass., died April 20 at Wellesley. He was graduated from the Massachusetts Institute of Technology in 1890.

E. Jack Bendigo, 24, a lieutenant in the Army was killed in action on the Italian front Jan. 31. He was a graduate of the textile school of North Carolina State College and before entering the service was employed in the rayon mill of Marshall Field & Co., Leaksville, N. C. He is a brother of C. W. Bendigo, assistant editor of TEXTILE WORLD.

Theodore G. Joslin, 54, director of public relations, E. I. du Pont de Nemours & Co., Wilmington, Del., and secretary to President Hoover during his term in the White House, died in Wilmington April 12.

William D. Brumbach, 77, for many years identified with the A. J. Brumbach, Inc., woolen mills at Esterly-St. Lawrence, Pa., established by his father, died in Reading, Pa., April 20.

M. T. Ellis, 50, secretary and assistant treasurer of Clinchfield Mfg. Co., Marion, N. C., died April 21.

S. Vance Bradley, sales manager of the Puritan Cordage Mills, Inc., Louisville, Ky., manufacturers of cotton specialties, was found dead in his compartment of a New York to Louisville train, on its arrival in Louisville, April 3. He was previously for some years sales manager of the old McCord Co., Grahampton, Ky.

Henry Herbert Wilson, 28, Austell, Ga., a graduate of the Georgia School of Technology, Atlanta, a departmental superintendent of the Clark Thread Co., Clarkdale, Ga., before entering the armed service in May, 1942, was killed in action over Brunswick, Germany, Feb. 10. He was a pilot of a Flying Fortress and was on his 12th mission. He was a first lieutenant.

Frank J. Cunneen, 53, Washington representative of Cochrane Corp., Philadelphia, Nordburg Mfg. Co., Milwaukee, and LeRoi Engine Co., Milwaukee died at his home in Washington, D. C., April 7.

William F. Shaffner, 74, a director of Washington Mills, Mayodan, N. C., and Arista Mills, Winston-Salem, N. C., died March 30.

Francis J. Bowers, for many years treasurer of the Scandinavia Belting Co., Charlotte, N. C., died recently.

Hampden Wallace Harding, 24, secretary of H. C. Harding, Inc., Philadelphia, Pa., before entering the service, was killed in action Mar. 13. He was a first lieutenant with the Flying Tigers. He had 50 missions to his credit in India and China. He crashed in the Hainan Strait.

Lewis Josselyn Young, 42, treasurer and principal owner of the Gordon Woolen Co., Newport, N. H., died April 18 after several weeks' illness. He came to Newport in 1924 to become manager of the Gordon Mill for Homestead Mills, Inc., and in 1934 acquired the controlling interest.

John Adam Muehling, 81, retired publisher of the Union-Leader in Manchester, N. H., and a leading figure in the organization of Amoskeag Industries, Inc., which took over the real estate holdings of the old Amoskeag Mfg. Co. in that city a few years ago, died in St. Petersburg, Fla., April 19.

Claude D. Gott, Chattanooga, Tenn., prominent yarn broker, died April 9, in St. Petersburg, Fla., where he had gone following an illness of pneumonia.

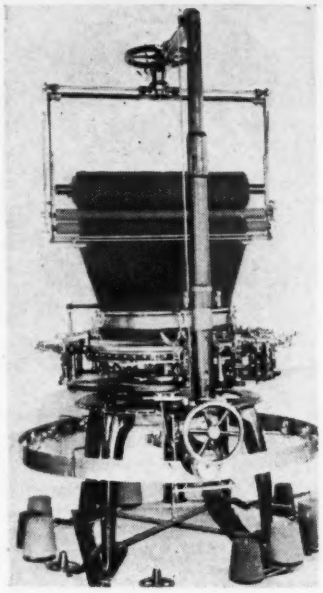
Charles A. Wyman, superintendent of the textile mills at the Virginia State Penitentiary, Richmond, Va., died April 23.

W. C. Cobb, 80, first superintendent of Ware Shoals Mfg. Co., Ware Shoals, S. C., died March 27.

Emmett R. Nelson, 62, superintendent of Lynchburg Hosiery Mills, Lynchburg, Va., and connected with the firm for 43 years, died March 24 in Lynchburg.

Charles W. Penepacker, 43, chief inspector on finished goods at Susquehanna Mills, Inc., Sunbury, Pa., died recently.

Homer V. Cook, 24, a textile engineer for the Bibb Mfg. Co., Macon, Ga., prior to entering the Marine air corps in May, 1941, has been killed in action, his parents have been informed.



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Single Head Spring
Needle Knitting Machine

Electrically driven by V-belt simplified motor drive. See its many improvements.

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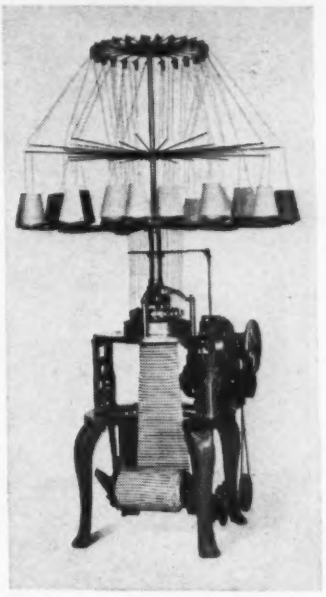

Model B-15
Multiple Feed Latch
Needle Knitting Machine

Made in all sizes from 9" with 20 feeds, up to 24" with 52 feeds. Gauges start at 42 gauge, 28 needles per inch and coarser.

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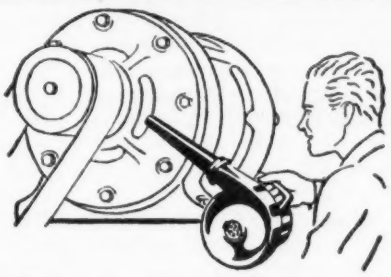

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For Circular, Full Fashioned, Tricot and Milanese Knitting Frames, also Narrowing, Stand, Transfer Points and Welt Hooks for Full Fashioned Machines: Slides, Sinkers, Jacks, Guides or Flat Eyes, Sley and Milanese Points, Transfer Points or Quills, etc.

Sheet Metal Specialties to Order

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KNITTING MACHINES

meet the need for Speed— for Quality and Low Cost

CRANE Knitting Machines meet the demands of rapidly changing patterns and styles. Their middle name is *versatility* . . . plus smooth, fast running operation that eliminates expensive stops. Among their exclusive features are patented hardened Wing Burr Wheels and patented Thread Stop Motion. There's many a Knitting Mill in which batteries of Cranes are the mainstay of production.

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A single 119 inch Red-Ray Burner applied to cans for drying inch thick felted material. Drying speed increased 60 per cent.

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We build single, double and triple pick counters; yardage, rotary, ratchet and special counters.

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NEWS ABOUT Mills

Cotton Mill News

Aldora Mills, Barnesville, Ga., subsidiary of General Tire & Rubber Co., has applied to the National Housing Commission for permission to erect 100 new homes for its operatives, and if permission is granted, the company will install sanitary facilities for the entire mill village and construct a sewage disposal plant. The Aldora mill furnishes 60% of all tire-cord required by the company, and at the completion of the additional facilities now in process of construction, will raise its production to 75%. Aldora has lately awarded contract to Parks-Cramer Co., Charlotte, N. C., for installation of air-changing and humidifying system in new mill unit, now under way. Structure will be two-story, about 100 x 272 ft.; Frank Binford, Thomaston, Ga., has general erection contract. Award has been made to Georgia Power Co., Atlanta, Ga., for power supply and power substation is being erected at mill site.

Alpine Rug Co., Asheville, N. C., a newly established rug plant, began operations on April 1. The new company's equipment is installed at 67–69 Biltmore avenue. Hooked rugs will be manufactured. A one-story building has been leased from P. K. Wilde, and the initial machinery set-up will include 12 looms, four spool-winders, two warpers, three sewing machines and two cutting machines. David Minoff, of Paterson, N. J., is a partner in the new concern, along with Lazarus Shabry, of New York. It is a subsidiary of the Argus Yarn Co.

American Thread Co., Tallapoosa, Ga., new plant for the company, got into full production around the middle of April. The new plant is being operated under the supervision of J. F. Plexico.

Boston Woven Hose & Rubber Co., Cambridge, Mass., has work in progress on important alterations affecting 55,000 sq. ft. of floor space. Alterations to basement and two floors will cost $10,000.

Brodnax Cotton Mills, Brodnax, Va., which were partly destroyed by fire in September, 1943, have been purchased by outside interests. Plans are underway to rebuild the plant, with facilities expanded one-and-one-half times the original plant.

Castle Cotton Mills Co. is the firm name under which Louis I. Casselman has published a certificate that he is conducting business at 848 South Hill street, Los Angeles, Calif.

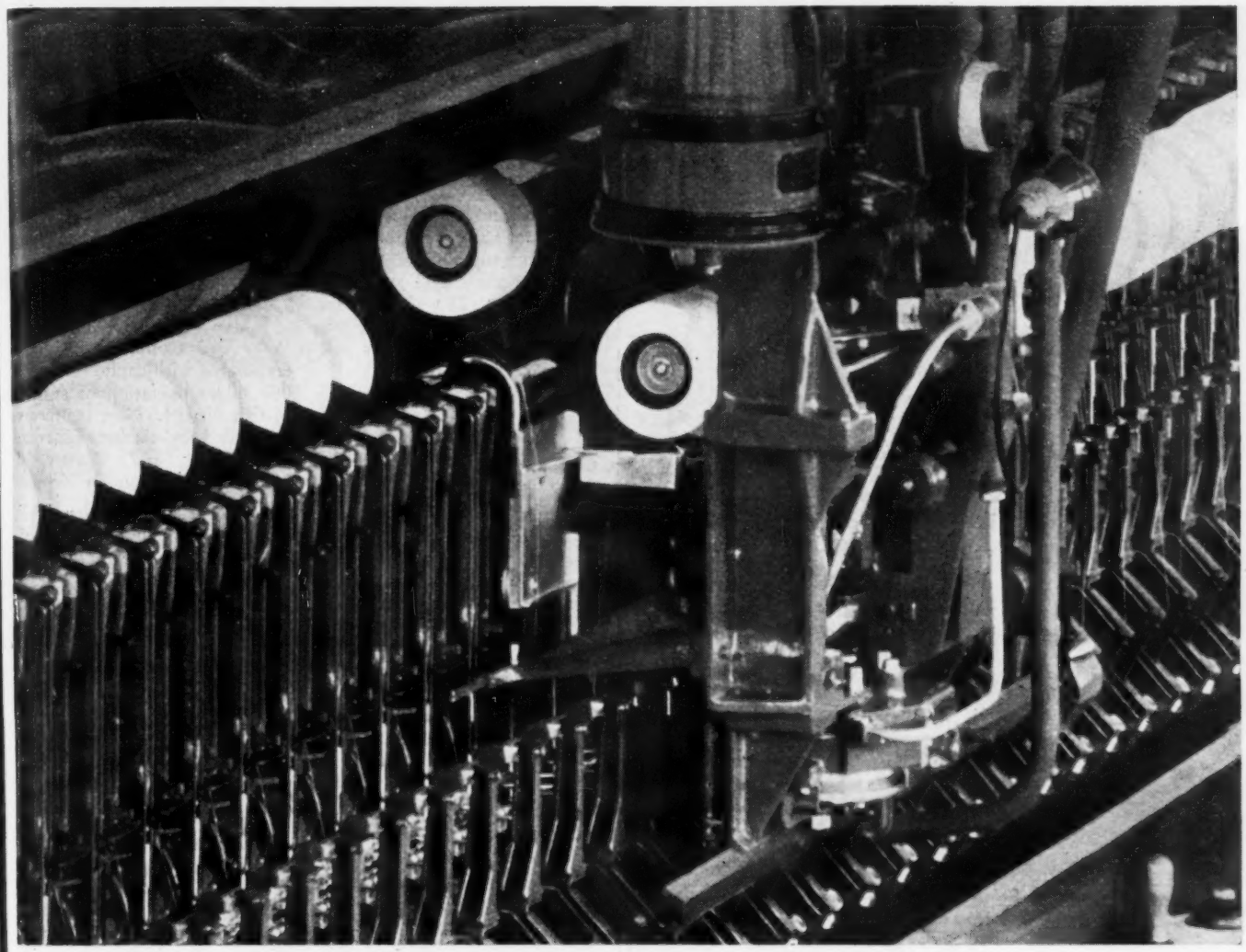
Drummondsville Cotton Co., Drummondsville, Que. (previously reported) has let general contract to Anglin-Norcross Quebec, Ltd., Montreal, Que., for proposed two-story addition, estimated to cost about $85,000, with equipment. T. Pringle & Son, Ltd., Montreal, are architects and engineers.

R. J. Ederer Co., 548 New Orleans St., Chicago, Ill., manufacturer of cotton and linen netting, etc., has contracted with Government for expansion in plant for increased output for war service. Considerable additional equipment will be installed. Cost estimated about $100,000, with financing provided by Defense Plant Corp., Washington, D. C., Federal agency.

Hartwell Mfg. Co., Hartwell, Ga.—R. J. Jenness, of New Orleans, La., has purchased all common stock held by W. H. Jennings and his family in the Hartwell Mfg. Co. Mr. Jennings has resigned as president and chairman of the board of directors and severs his connection with the company. Future management will be by the new owner.

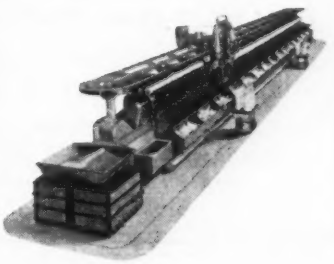
Little Rock Textile Co., Little Rock, Ark., at 212 East Sixth street was damaged by fire March 25 caused by an overheated motor.

Opelika Mills, Opelika, Ala., have plans for large addition to mill, reported to cost over $900,000, with machinery, and will award contract for erection



You Want Machines that Keep Running

WHEN you are trying to do a good job of making textiles, you want machines that keep running without a lot of down time for repairs and service. Machines that don't keep running do two things — they cut production and they run up the cost of the goods. And operators lose time when their machines are out of order. . . . If you will check the records of Barber-Colman Automatic Spoolers and Super-Speed Warpers, you will find they *do* keep running. That is not just luck. We build these machines to keep service costs low, because we realize how much that means to you. Throughout the machine we use good materials and workmanship so the parts will have long life with little wear. During the past twenty-five years we have made many changes and improvements which have bettered performance and reduced maintenance costs. All this adds up to: If you want to produce better war goods faster, and at lower cost, use the Barber-Colman System.



BARBER-COLMAN
Automatic
SPOOLER

AUTOMATIC SPOOLERS • SUPER-SPEED WARPERS • WARP TYING MACHINES • TWISTER CREELS • MOISTURE CONTENT CONTROLS

BARBER-COLMAN COMPANY
ROCKFORD, ILLINOIS, U. S. A.
FRAMINGHAM, MASS., U. S. A. GREENVILLE, S. C., U. S. A. MANCHESTER, ENGLAND

HOFMANN NEEDLES AND SINKERS

MICRO

AN OUNCE OF PREVENTION

Every day that the war continues imposes just that much additional strain, wear and tear on over-run full-fashioned hosiery machines.

A few needed replacements and adjustments by HOFMANN SERVICE EXPERTS will not only improve operating efficiency but actually forestall serious trouble. Ask us to quote. No obligation.

RE-NEEDLING
RE-CUTTING
RE-SINKERING

POINTS
DIVIDERS
SPLIT DIVIDERS
KNOCKING OVER BITS
JACKS
WELT HOOKS

ALFRED HOFMANN PLANTS
WEST NEW YORK, NEW JERSEY
Southern Representatives:
Southern Hosiery Machine & Service Company, VALDESE, North Carolina

TIR

TEXTILE INDUSTRY RESEARCH
INCORPORATED
11 WEST 42ND STREET NEW YORK. N. Y.
CONSULTANTS ON TEXTILE MANUFACTURING
AND DEVELOPING
SPECIALIZING IN
OPERATING METHODS. WORKING CONDITIONS.
MAINTENANCE. WASTE CONTROL.
NEW FIBRES AND PROCESSES

Simplified DESIGN
Flexible POWER
Better EVAPORATION
More sensitive CONTROL

SOUTHWORTH HUMIDIFIER

Experienced textile men who know the merits of previous models of Southworth Humidifiers have found improvements in Model D that make it even more reliable and efficient.
Extreme sensitivity of control, and an "airplane propeller" type fan for greater evaporation, are two outstanding features.

NOTE
This advertisement is to remind you to include Southworth Humidifiers in your after-the-war plans. Frankly, we are 100% on war work and cannot make humidifiers at the present time.

THE SOUTHWORTH MACHINE CO.
PORTLAND MAINE

at early date. Project is said to have a priority rating. Robert & Co., Bona Allen Bldg., Atlanta, Ga., are architects and engineers.

Simmons Co., Kenosha, Wis,. has let general contract to J. Peter Larson, Kenosha, for three-story top addition to present three-story mill on Fifth Ave., about 28 x 52 ft., reported to cost over $40,000, with equipment. Project will have a priority rating.

Statesville Cotton Mills, Statesville, N. C.—The interest of Mr. and Mrs. F. B. Bunch, Sr., and F. B. Bunch, Jr., in the Statesville Cotton Mills has been sold to John W. Wallace, W. C. Sykes and C. A. Sykes of Statesville, and Milton Herman of Danville, Va.; and Milton Herman, a brother-in-law of Wallace has been named a director of the company. Wallace is secretary-treasurer of the firm. For many years, F. B. Bunch, Sr., was secretary-treasurer of the company, and in recent years F. B. Bunch, Jr., now a lieutenant (jg) in the Naval Reserve, has served as assistant secretary.

Wabasso Cotton Co., Ltd., Three Rivers, Que. (previously reported), has awarded general contract to Deakin & Stewart, Ltd., 440 St. Catherine St. W., Montreal, Que., for new addition to mill, including improvements in present plant, estimated to cost in excess of $100,000, with equipment. Work is being placed under way.

Wehadkee Yarn Mills, West Point, Ga., have taken over plant of Samoset Cotton Mills, Talledega, Ala., recently acquired for a reported price of $380,000, and will continue production as a branch mill. New owners have asked WPB to be relieved of a directive requiring production of denims as they wish to run plant on heavy yarns for duck.

Wool Mill News

Artex Woolens, Inc., Hespeler, Ont., has plans maturing for new addition to mill, reported to cost close to $125,000, including equipment. Work is scheduled to be carried out this spring.

Glenside Mills, Skaneateles Falls, N. Y., recently reported sold to the Axelrod interests of Woonsocket, R. I., has been resold to Glenbrook Woolen Mills, Inc., Muncy, Pa. This concern operated the Glenside Mill in 1936 and 1937 under a lease. Since then the plant has been thoroughly re-equipped and modernized. The Glenbrook organization intends to continue operations at their Muncy mill. A. L. Granger, president, will manage both mills with headquarters at Skaneateles Falls, N. Y.

Jordan Woolen Co., Inc., Waterford, Conn., recently incorporated with capital of $10,000, plans operation of a mill in this district. New company is headed by Arthur Lacroix, Waterford; and Grisswold Morgan, New London, Conn.

New England Woolen Mill in the Hallville section of Preston, Conn., suffered fire loss in excess of $50,000. As soon as an insurance adjustment is made the plant will be rebuilt. A portion of the mill needs only repairs.

Paris Woolen Mills, Stayton, Ore., has been sold by R. D. Paris to J. B. Powell, vice president for 28 years of the Portland Woolen Mill, Portland, Ore.

Riverside Worsted Co., Woonsocket, R. I., has leased the fourth floor of mill on Fairmount St., to United States Rubber Co., Woonsocket and New York, which will be occupied at once for another line of production.

Rhode Island Woolen Co., Woonsocket, R. I., has been organized with capital of 150 shares of stock, no par value, to operate a mill in this vicinity. Berthelot Leclaire, 301 Harris Ave., Woonsocket, is principal incorporator.

Rayon & Silk Mill News

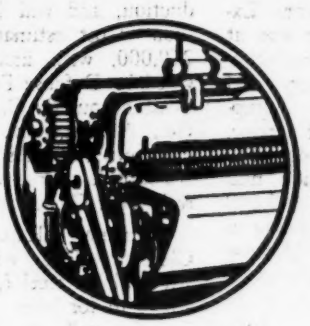
American Silk Mills, Inc., Lancaster, Pa. has sold its plant employing 210 persons to Widder Bros., Emaus, Pa., and New York, N. Y. The plant at Lancaster, which was established 17 years ago, will be operated by the new owners. At present it is filling war contracts. The property was sold through David Speizman, West Pittston, Pa.

American Silk Spinning Co., Providence, R. I., has completed repairs to a small building on Whipple Street. O. D. Purington Co., Inc., did the work.

American Viscose Corp., Wilmington, Del., will begin production of tire-cord rayon yarn at its mill at Lewis-

WEAVE FOR VICTORY

WEAVE FOR VICTORY



VICTOR MILL STARCH

"The Weaver's Friend"

- Always Uniform
- Dependable
- Carries Weight Into the Fabric
- Penetrates Thoroughly
- Boils Thin

Distributed by
CLAUDE B. ILER
Southern Manager
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C. C. SWITZER
GREENVILLE, S. C.

L. J. CASTILE
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THE KEEVER STARCH CO. . . . COLUMBUS, OHIO

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ROME SOAP MFG. CO.

MANUFACTURERS OF

Textile, Laundry

and

Special Soaps

WRITE US FOR SAMPLES AND QUOTATIONS

ROME, N. Y.

WE'VE LEARNED A LOT IN OUR 50 YEARS!

50 years of specialized experience in producing tanks and tubs for the textile industry *has taught us some things that will be valuable to you!*

Let us tell you about our complete Caldwell service, which includes Stainless Steel-lined tanks and tubs—round, rectangular and special shapes. *Catalog on request.*

W. E. CALDWELL CO.
Incorporated
2060 Brook St. Louisville, Ky.

Caldwell TANKS AND TOWERS

2 GOOD CHEMICALS FOR COTTON GOODS

V VIRGINIA

"VIRGINIA" (SODIUM) HYDRO

A dependable Hydrosulfite for Vat Dyeing and Stripping.

1. Crystalline, stable
2. Free-flowing; non-caking
3. Easily and Quickly soluble

Packed in 250 lb. *airtight* containers.

"VIRGINIA" (LIQUID) SO_2 THE IDEAL ANTICHLOR

The "Old Reliable" of the finishing plant. Low concentrations . . .

— remove active chlorine
— neutralize residual alkalinity
— eliminate excessive washing

Constant make-up by continuous flow to the pit. Shipped in steel cylinders containing 150 lb. net weight.

VIRGINIA SMELTING CO.
WEST NORFOLK, VIRGINIA

EXTRAORDINARY

How DEVOPAKE hides and covers *any surface in just one coat!*

And in these extraordinary times it is just the paint you need to save time and money and man hours. DEVOPAKE covers more surface per gallon, hides solidly — in one coat — any interior wall surface, is a self-sealer and finish-coat in one, has an oil-base that makes it really wear — stand repeated wash downs.

For complete, guaranteed satisfaction . . . for money saved . . . specify DEVOPAKE. If your agent is temporarily out of popular DEVOPAKE — be patient. War needs come first.

DEVOE PAINT

The 190th year of the Oldest Paint Maker in America

FIRST AVENUE AT 44th ST., NEW YORK 17, N. Y.

Many models for many purposes

The 60 models of *Scott Testers span the field of physical testing requirements for tensile, hysteresis, crepeage, twist, burst, flexing, etc., etc. We offer every assistance in adapting your Scott Testers to the requirements of wartime production.

SCOTT TESTERS

*Registered Trademark

HENRY L. SCOTT CO. 95 Blackstone St. Providence, R. I.

★ ★

J. E. SIRRINE & CO.

GREENVILLE • SOUTH CAROLINA

Engineers for more than 40 years

TEXTILE MILLS • CHEMICAL PROCESS PLANTS

PULP & PAPER MILLS • WASTE DISPOSAL

STEAM POWER PLANTS • STEAM UTILIZATION

WATER • APPRAISALS • PLANS • REPORTS

town, Pa., early in June. Expansion is now under way at this mill, including installation of additional machinery and conversion of present equipment for new line of service, estimated to cost about $4,000,000. On completion, mill will have rating of 22,000,000 lbs. per annum. Financing is being provided by Defense Plant Corp., Washington, D. C.

Berwick Weaving, Inc., Berwick, Pa. has completed an addition to the mill and has installed weaving and quilling machinery which was supplied by David Speizman of West Pittston, Pa.

Bibb Mfg. Co., Columbus, Ga., is pushing construction of a large addition to its Meritas Mill property. The new mill will be equipped for production of rayon tire-cord, with facilities for the production of about 125,000 lb. weekly. The company also has work in progress on the installation of machinery in the existing mill, as WPB has already approved an expenditure of $1,259,168 for machinery and equipment.

Canadian Celanese, Ltd., Drummondsville, Que., has plans maturing for two new additions, four and one-story, respectively, 75 x 150 ft., and 155 x 200 ft., in order noted. Cost reported over $550,000, with equipment. Erection contract will be awarded soon.

Excelsior Mills No. 2, Clemson, S. C.—Work is going forward rapidly on the new plant for production of high-tenacity rayon tire-cord, which is being built and will be operated by Excelsior Mills, of Union, S. C. These mills are controlled by Deering, Milliken & Co. The plant will be modern in every detail, of windowless construction, completely air-conditioned, and equipped with fluorescent lighting. It is located on a tract of 240 acres and will represent an investment of approximately $2,000,000 with machinery. The buildings will include a main processing and production building of about 100,000 sq. ft. of floor space and a number of smaller units, including a powerhouse, pumping station, machine shop and office building. J. E. Sirrine & Co., Greenville, S. C., prepared the plans, and Daniel Construction Co., Greenville, has the contract.

Goodyear Decatur Mills, Decatur, Ala., has plans for one-story addition, 280 x 360 ft., for increase in tire-cord production, and will begin work soon. Cost estimated at $1,250,000, with financing provided by Defense Plant Corp., Washington, D. C. Robert & Co., Atlanta, Ga., are architects and engineers. Company is a subsidiary of Goodyear Tire & Rubber Co., Akron, Ohio.

Industrial Rayon Corp., Cleveland, Ohio, will soon begin work on steel frame superstructure for large addition to branch mill at Painesville, Ohio, forming part of expansion program at that plant already under way for several months. New structure is reported to cost in excess of $500,000, with equipment, and will be used for high-tenacity rayon yarn manufacture. Austin Co., Cleveland, has general erection contract.

North American Rayon Co., Elizabethton, Tenn., plans construction of several new buildings to be used in high-tenacity yarn manufacture for tire-cord. The general contract has been awarded to the Hughes Foulkrod Co., Philadelphia. Engineers for the new project are Moron, Proctor, Freeman & Mueser, of New York.

Somerset Fabrics, Inc., 38 Third St., Fall River, Mass., lately chartered with capital of 520 shares of stock, plans operation of local mill for manufacture of upholstery fabrics. Herman Weissman, 55 East 21st St., Brooklyn, N. Y., is president and treasurer.

Staunton Textile Corp., Staunton, Va., has been granted permission by WPB to complete construction of portion of branch weaving mill at Verona, Va., originally begun a number of months ago and later discontinued on account of building restrictions. Work will proceed at once. Additional equipment will be installed.

United States Rubber Co., New York, has begun construction of a new textile plant at Scottsville, Va., as a part of the Government's program to supply more rayon tire-cord needed in the manufacture of synthetic rubber truck and bus tires. Ultimately this plant will produce 12,000,000 lb. of twisted rayon tire-cord annually. Cost of the project which, including land, building and machinery, is estimated at $2,240,000, will be financed by the Defense Plant Corp. The plant will be windowless, and temperature and humidity control maintained by a complete change of air every six minutes. Other textile mills now being

in WAR or PEACE

ARKANSAS PRODUCTS *Serve Dependably*

FUNGICIDE: A mildew proofer made in various types to meet all government specifications.

ARKO FIRE RETARDENT: For flame-proofing uniform cloth, felt and all types of rayon and cotton fabrics including theatrical drapes.

***AQUAROL:** A water repellent for uniforms, overcoatings and other military fabrics; also all civilian garment cloth.

***PARAMINE:** A cation active softener for processing cotton and rayon cloth to obtain a soft, smooth, pleasing finish.

***ALGEPON P.:** A retarding agent for vat and sulphur dyeing to prevent premature oxidation of the dye-stuff or in other processes when necessary to retard exhaustion to obtain a uniform shade.

***PARAPON S. A.:** A highly efficient leveller and softener used in dyeing and finishing all types of viscose and acetate rayon. Excellent for processing tricot cloth.

ARKOLA G.: For finishing rayons to impart a full, better feeling hand and additional weight. An excellent substitute for glycerine for printing and finishing.

***CULOFIX:** Used as an after treatment in last rinse to prevent bleeding of direct dyed cotton or rayon in water.

***DIAZONOL A. C.:** For boiling out cotton cloth in pressure or open kiers to produce greater absorbency and cleaner material. Excellent for preboiling knitted cloth in preparation for chlorine bleach. Also used with good results for boiling out cotton or rayon cloth in the jig.

And a Complete Line of Oils, Chemicals, Softeners and Finishes
For Wet Processing All Textile Fibres

*Reg. U.S. Pat. Off.

ARKANSAS CO. INC., NEWARK, N. J.

Established 40 years

AMERICAN

. . . more economical to use because . . . .

it runs more efficiently, producing a finer quality product that can be sold easier and more profitably

AMERICAN
YARN AND PROCESSING CO

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TEXTICIDE "M"
NEW AND SAFE

ORGANIC MILDEWPROOFING COMPOUND

Comes in Liquid or Powder Form, Both Miscible with Water or Solvents.

***Non Toxicity* and Performance Tests By Well Known Independent Laboratories Available on Request.**

***Texticide "M" is Non-Irritating to the Skin,* Non-Metallic and Non-Corrosive.**

ATLANTIC STAINPRUF CO., INC.
258 MAIN ST. CHATHAM, N. J.

INDUSTRIAL ENGINEERS

Specializing in
TEXTILES FOR MORE THAN A QUARTER OF A CENTURY

RALPH E. LOPER CO.

COST SYSTEMS WORK LOAD STUDIES
PAY ROLL CONTROLS
COST REDUCTION SURVEYS SPECIAL REPORTS

GREENVILLE, S.C. FALL RIVER, MASS.

operated by United States Rubber Co., devoted to tire-cord production are located at New Bedford, Mass.; Shelbyville, Tenn.; Hogansville, Ga.; and Winnsboro, S. C.

Oscar Kohorn & Co., Ltd., New York, N. Y., will begin work at once on new mill at Scranton, Pa., for production of high-tenacity yarn for tire-cord service. It will operate under a new process and is estimated to cost about $200,000, with equipment. Project will have a priority rating.

Carl Stohn, Inc., mill at Taunton, Mass., and branch plant at Granby, Canada, has been taken over by the Gilbert Vernay interests. A. C. Stohn, president, and Carl Stohn, vice president, plan to retire from business, but George T. Adams, treasurer, will remain in the management of the Stohn plants under the new ownership. The Taunton plant has 400 jacquard looms, and the Granby plant 118 jacquard looms. The main office of the Vernay group of mills is at 100 Newberry Street, Boston, Mass.

Knitting Mill News

Bryan Hosiery Co., Chattanooga, Tenn., has knitted 30 den. 74 filament Bemberg yarn on 66 gauge machines into the finest rayon stockings yet produced. Only a small quantity has been made for experimental use, and some has been sent to Hollywood.

Ellenbee Novelty Co., New York, N. Y., recently organized, leased a floor in building at 10 West 18th St., and will occupy for new plant for manufacture of knitted outerwear for juvenile use.

Gray Line Hosiery Co., Chambersburg, Pa., has been purchased by interests headed by Stanton D. Sanson.

Great Knit, Inc., Bronx, New York, N. Y., care of Jac J. Nisonoff, 1450 Broadway, New York, attorney and representative, recently organized with capital of $20,000, plans operation of a local knitting mill.

Liberty Hosiery Mill, Lyerly, Ga., has been sold and the plant will be moved in the near future to Fort Payne, Ala., where the business will be operated as the Chance Hosiery Mills, Inc., with R. L. Chance as president.

Roseclaire Knitting Mill, 122 Spring St., New York, N. Y., has leased space in building at 766 Broadway and will occupy for plant, increasing capacity.

Southern Knitwear Mills, Inc., is beginning manufacture of infants' knit woolen garments at 724 North Brevard Street, Charlotte, N. C. Eric Eiseman is secretary and treasurer of the new firm.

United Hosiery Mills, Inc., Northumberland, Pa., lately chartered, has taken over local mill of United Silk Mills Co., Inc., purchased for a new knitting mill for manufacture of women's hosiery, and will begin operations soon.

Westwood Knitting Mills is the firm name under which Louis Reister and Winifred Reister have published a certificate that they are conducting business at 407-425 East Pico street, Los Angeles, Calif.

Processing Plant News

Art Textile Decorating Co., 152 West 25th St., New York, has leased space in building at 108 West 25th St., and will occupy for processing plant, increasing present capacity.

Campbell Dye Works is the firm name under which Leon R. and Mona L. Sumers have published a certificate that they are conducting business at 4608–4610 Park Boulevard, San Diego, Calif.

Hellwig Silk Dyeing Co., Philadelphia, Pa., has changed its name to the Hellwig Dyeing Corp. There will be no change in management or personnel.

Housatonic Dyeing & Printing Co., Derby, Conn., has leased property on Roosevelt Drive, including partially erected building. Structure will be completed and occupied for expansion. Cost reported over $25,000, with equipment. It is understood that a priority rating has been secured.

United Piece Dye Works, Inc., Paterson, N. J., has begun erection of one-story addition, for which general contract recently was let to Gordon Construction Co., Newark, N. J., to be used for warehouse service. Cost reported over $35,000, with equipment.

United States Finishing Co., Norwich, Conn., has awarded contract to Bigelow Co., New Haven, Conn., for boilers and boiler settings in connection with expansion in boiler house at mill (previously reported). An award for stokers has been made to Westinghouse Electric & Mfg. Co., East Pittsburgh

SEARCHLIGHT SECTION

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10 cents a word, minimum charge $2.00.
(See ¶ on Box Numbers.)
POSITIONS WANTED (full or part-time salaried employment only), ½ above rates.
PROPOSALS, 50 cents a line an insertion.

INFORMATION:

BOX NUMBERS in care of any of our New York, Chicago or San Francisco offices count 10 words additional in undisplayed ads.
DISCOUNT of 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

DISPLAYED—RATE PER INCH

The advertising rate is $5.75 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.
AN ADVERTISING INCH is measured ⅛ inch vertically on one column, 3 columns—30 inches—to a page. T.W.

NEW ADVERTISEMENTS received by 10 A. M. May 29th will appear in the June issue, subject to limitations of space available.

THERE ARE MANY ATTRACTIVE OPENINGS IN MILLS

In all sections of the United States and Canada. If you are seeking employment, write us fully regarding your experience and position desired; we will inform you of positions now open in your line of work.

CHARLES P. RAYMOND SERVICE, Inc.
294 WASHINGTON STREET BOSTON 8, MASS.
Over 45 years' confidential employment service for men seeking positions and employers seeking men.

POSITIONS VACANT

TEXTILE COST man. Position available with well established and rapidly growing New England textile group. Salary open. Write full details. P-845, Textile World, 330 W. 42nd St., New York 18, N. Y.

WANTED SUPERINTENDENT take charge knitting plant woolen socks Acme and Banner machines also supervise production woolen fabrics, wages and bonus, mill location Dresden, Ohio. P-846, Textile World, 330 W. 42nd St., New York 18, N. Y.

WANTED: Chemist, familiar with textile industry. Knowledge of emulsions will be helpful. P-847, Textile World, 330 W. 42nd St., New York 18, N. Y.

POSITIONS WANTED

EXPERT FINISHER of woolen fabrics. Textile School of Cottons graduate; now employed in Chile by a leading manufacturer. Seeks position in U. S. Chilean, 37 years old, single. PW-802, Textile World, 330 W. 42nd St., New York 18, N. Y.

WOOLEN MILL superintendent, textile school graduate, 41 years old, married, 22 years experience on o'coatings, ladies wear, blankets, industrial cloth. Able to give excellent references. Available 15th of May. PW-851, Textile World, 520 N. Michigan Ave., Chicago 11, Ill.

SUPERINTENDENT of weaving now employed, desires change. Seeking a connection with a reliable firm. Broad experience on all kinds of rayons, spun rayons, cottons and blended yarns, etc. Fancy and Tabby weaves. Drapus, staffords, and crompton knowles looms. Has full knowledge of warp and filling preparation as well as weaving and grading of woven clothes. Am known as good help manager and specialize in training of inexperienced help. Can obtain high efficiency and quality. Also experienced designer. PW-849, Textile World, 330 W. 42nd St., New York 18, N. Y.

CORPORATION TREASURER

An executive position is open as treasurer of a large machine and metal working company in a New England city. Training and experience in finances, budgets, taxes, cost and general accounting essential. Company has excellent post-war prospects. Salary open, commensurate with proved ability and experience. Interviews to be arranged. Reply by letter giving age, technical training, experience, and references.

CHARLES F. RITTENHOUSE & COMPANY
Certified Public Accountants
10 Post Office Square, Boston 9

WANTED

PRODUCTION MANAGER BRAIDED RUG MILL

Large eastern cotton rug manufacturer has opening in organization for production manager in braided rug division; excellent future for right man who must be conversant with all phases of business including row materials, labor training, styling. State full details experience, age, compensation desired, etc. All replies will be held strictly confidential.

P-839, Textile World
330 West 42nd St., New York 18, N. Y.

WANTED

SUPERINTENDENT

Eastern Pennsylvania cotton rug manufacturer offers excellent opportunity to the right man: Knowledge sewing machine operation desirable; weaving experience and knowledge yarns essential. Must have ability handle personnel successfully. Should be ambitious, aggressive, resourceful. State full details, age, draft status, education, experience, starting salary desired.

P-838, Textile World
330 West 42nd St., New York 18, N. Y.

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LANCASTER, ALLWINE & ROMMEL
Registered Patent & Trade-Mark Attorney
Interesting booklet concerning Inventions, Patents and Trade-Marks, together with Schedule of Government and Attorney's Fees, sent without obligation. Simply ask for "booklet and schedule."
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Consulting Service
for
MANUFACTURERS AND USERS OF FIBERS AND TEXTILE PRODUCTS ON FIBERS PRODUCTS PROCESSES ENGINEERING
Box 37, North Scituate, Rhode Island — P. O. Box 494, Newark, Ohio

CONNECTION WANTED

have to offer exceptional experience in dyeing, finishing and general manufacturing. For the past 10 years engaged in consulting work. Desire connection with large concern or group of mills in executive capacity or as consultant. Will also consider connection outside the USA. Age 43, married, American citizen, thorough technical training.

PW-812, Textile World
330 W. 42nd St., New York 18, N. Y.

ADDITIONAL EMPLOYMENT ADVERTISING ON PAGE 220

WHAT'S YOUR textile mill—a profit-producing plant—or a stagnant equipment "storage warehouse"?

What's your floor space earning? Is it cluttered up with idle equipment—or with machines working to make money?

These days you can't afford "Equipment Stagnation". Especially when textile equipment is in big demand and brings good prices!

"Equipment Stagnation" can choke off profits in any textile mill. You can get rid of old equipment, replace it with better, newer, less worn machinery, "clear decks" for increased production or conversion—by cutting through the STAGNATION that comes from holding onto idle equipment instead of selling it to ◄MLC►.

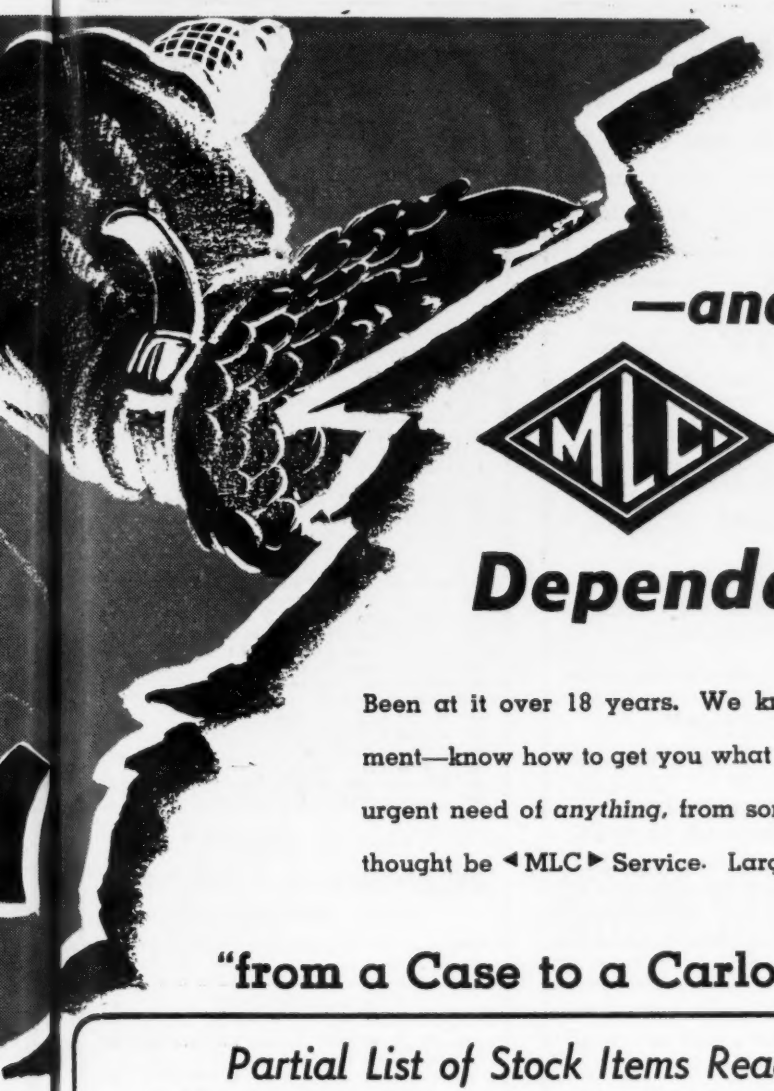
◄MLC► Service cuts STAGNATION, cuts delay and red tape, takes idle machines off your floor quickly; and converts them into capital for you.

We've got customers waiting. We will pay you *"fair-to-everybody"* prices NOW—for equipment that won't be worth much *if the War should end suddenly* or conditions change overnight in the textile field. It's the biggest kind of gamble to hold out for bigger prices—unpatriotic as well. What's more, it's bad business. Don't let STAGNATION throttle mill profits—cut it quick—cut it NOW—with ◄MLC►. Just tell us what you've got you don't need, one item or a whole mill!

We have calls now for complete Woolen Mills (3 card sets up): Cotton Mills from 10,000 spindles up. Other wanted equipment includes Cards for cotton, wool, jute; Picking Machines for all kinds of textile fibres; Spinners; Twisters; Looms, etc., etc., for any textile operation.

Sh-sh-sh

CONFIDENTIALLY . . . many textile men interested in selling their mills don't want the news to get around, for good reasons. It won't when ◄MLC► handles the deal. All negotiations and inquiries conducted to protect your interests, without publicity. Confide in ◄MLC► for results without regrets.



—and don't forget MLC also SELLS Dependable Equipment

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Partial List of Stock Items Ready for Immediate Delivery

2—46" Button Breakers
1—52" Button Breaker
1—42" Butterworth 3-Roll Friction and Rolling Calender, motor driven
1—Complete Set Combers including:
  1—Whitin Ribbon Lapper
  1—Whitin Sliver Lapper
  8—Whitin Model "C" Combers
1—Rotary Cloth Cutter, 5" knife
1—46" Windle Doubler
1—36" Doubling & Winding Machine
5—Dblg., Boarding & Winding Machines
1—28" Stick Klauder Weldon Skein Dyeing Machine
1—36" Empire Extractor
1—42" Fletcher copper basket, top motor driven extractor
1—Kitson Thread EXTRACTOR
1—40" Elliott & Hall Folding Machines
4—42" Elliott & Hall Folding Machines
4—46" Elliott & Hall Folding Machines
1—6 Delv. Whitin Drawing Frame with 12" coiler
1—Schultz Fulling Mill
8—1200 h. Halton Jacquards, 9" litt
58—38" Model E Draper Auto. Looms
120—40" Draper Modified "D" Looms for 20 harness work (double index dobbies) 45½" reed space, belt driven
60—42" Modified "E" Draper with roller tops, 47½" reed space, belt driven
19—44" Model D Modified Draper Auto. Looms
50—52" C & K 4 x 1 Auto Looms, 56½ R.S. 25 Har. Belt Driven
100—76" Draper Modified "D" Lacey top looms, 82" reed space, belt driven
96—82" C & K 4x4 25 Harness motor driven woolen looms
2—82" C&K (4x4) 25 Harness Woolen Looms, Belt Driven
1—Butterworth Picker 10,500 teeth.
1—42" C & M Fearnaught Picker with auto. Feeder
2—92" C&K 25 harness mtr. drn. auto. Looms
2—66" Voelker Cloth Presses
1—60" C & M Plush Shear
3—66" C & M 2-Blade Shears
3—66" P & W 2-Blade Shears
1—72" Montsford 2-blade Shear
1—Schulze 106" Double Shear
3—204 Sp. Lowell 2¼" Ring Band dr. Spinners
8—264 Sp. Whitin Spinners 1¾ R 3" Gge.
8—120 Spindle Draper Spoolers with Foster Tensions and McCall Guides
1—60" C & M Tiger
4—20 Spindle Universal #90 Filling Bobbin Winders, bottom supply
1—100 Spindle Foster #12 Cone Winder, bottom supply
3—110 Spindle Hopedale 3" Ring Twisters
1—56 Spindle Draper 2½" Ring, 3½" Gge Twister
1—Barber Coleman Auto. Warp Tying Mach., size 4-E.
1—44" Simplex Winding & Measuring Mach. Mtr. dr.
1—#90 Universal Winder
2—60" Edge Stenciling & Winding Machines

MACHINERY LIQUIDATING COMPANY

OPA REGISTRATION NUMBER 789

EST. MLC 1923

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1—WASHER 6 String, Mtr driven.
2—TENTER FRAMES 48" & 58" wide.
6—SHEARS 36" to 88" widths.
4—TAPE CONDENSERS 60" & 72" Cards.
2—SEWING MACHINES Rotary style.
2—ROTARY STEAM PRESSES 66½".
30—SPINNING FRAMES 2½" Gauge.
1—PALMER 60" Blanket & Dry Cans.
2—QUETCHES 44" & 50" 3 roll units.
6—NAPPERS D.A. 20, 24 & 36 roll.
8—MULES 480 Spindle units 1⅞" Gauge.
2—FULLING MILLS Double Compartment.
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1—EXTRACTOR 48" Underneath Mfr. Drive.
1—DOUBLING & FOLDING Machine 90" goods.
1—DOUBLER 54" clock & motor.
2—CALENDERS Friction 42" & 56" 3 roll.
1—CALENDER 47" 5 Bowl Mycock Expander.
1—CALENDER Embossing 43½" 3 sets design rolls, motor driven.

Miscellaneous: Bristle Brushes, Brass & Wood Rolls, Rubber Rolls, Gears, Pulleys Etc.

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1—Minnick, all steel, Baling Press, 4½x6½, with 5 HP 550 Volt Motor.
1—Windle 36" Doubling & Rolling Machine.
1—Tolhurst 48" Extractor, overhead belt drive.
1—Bock Extractor, 17" basket, safety cover, direct enclosed motor drive 110 volts.
1—Pittsburg aut. Gas Water Heater, size #55 almost new.
2—S-L Slubbers, 68 spindles.
1—Card or Napper Grinder, adj. to 84" with traverse grinder and 2 sets of grinding wheels.

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40 Crompton & Knowles Worcester 2 x 1 Looms, 78" reed space, 20 harness, intermediate heads, roller bearing, shock absorber, individually motor driven, at a very attractive price.

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141-45 West 17th Street **New York, N. Y.**

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TEXTILE MACHINERY FOR SALE

Sargent Duplex Burr Picker
60" Bramwell Card Feed
20" Gerry Picker
28" F. Franke & Co. Picker
Pin and Pinless Warpers, any size
#50 Universal Winders, rebuilt to your order
#90 Universal Winders, rebuilt to your order
#180 Universal Super Cone Winders 8x8
600 hook, Royle, piano type Card Cutters
0. Lever Chenille Cutters
82" and 92" C & K 4x4 box, 25 harn Looms
4x6 wooden Spools
4½x6" wooden Spools
2⅞x3½" Sipp Spools
78" C.&M., 2 cyl. Brush with Steamer
66" Sjostrom Cloth Finishing Machine
48" Fletcher Extractor, motor driven
82" Woonsocket, 20 roll, D.A. Nappers
66" heavy duty, Jumbo type, Gessner Press
72" Century type Gessner Press
80" Century type Gessner Press
82" double bed, Voelker Press
66" E. Gessner Press
66" Model A, 2 cyl. Shears
66" Model B, 2 cyl. Shear
66" 2 cyl. C & M Shear
66" P & W Plush Shear
76" 2-burner, gas, C & M Singer
64" 2-burner, gas, C & M Singer

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12—C. & K. 82" motor driven 4x1, 25 harness, Heavy Looms
12—C. & K. 82" motor driven 4x1, 25 harness Intermediate Looms
150—8" automatic Worsted Filling Bobbins
1—P. & W. 62" three cylinder Brush (like new)
1—P. & W. 66½" two brush Machine
11—Fibre Gill Box Cans 36" x 12" x 18"
1—Lang Yarn Conditioning Machine
1—72" 3-bowl Yorkshire Crabb
8—Luther Thread Dressers, 1, 2, and 3 brush
1—Tolhurst 48" Extractor, copper basket
1—48" Atlas #2 Picker Feed
1—Franklin 250 gal. cast iron Size Kettle
1—Saco-Lowell 250 gal. cast iron Size Kettle, double agitators
1—Clark 48" Lumper, ball bearing
2—Rag Pickers 28" x 18" cyl. ball bearing
14—1 1/16" x 6 7/8" Foster Wood Rolls
3—Birch Bros. Coronation portable Sewing Machine
4—Warp Compressing Machine Co. 32¼" Multiple Spoolers
1—Utsmann double head Bobbin Stripper
2—Entwistle Warpers 54" cylinder
3—60" 120-end Cashiko Tape Condensers
1—96 sp. Universal 60-GF Cone Winder
5—Oswald Lever #20 Cop Winders
1—Atwood 20-spindle spool Doubler, 3 ends up
Foster Winders. Any package or number of spindles.
#50 and #90 Universal Winders. Rebuilt to order.

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7 ROLLS—80" FACE

3 Composition Rolls, 4 Steel Rolls, Hydraulic lift —water-cooled journals. Located in South

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10—R. B. & F. 1 to 10 color Print Machines, 40" to 64" wide, complete.

AGERS

1—Cast Iron Ager, 18' x 60".
1—Cast Iron Ager, 12' x 66".
1—30' Steel Ager.
1—Haveg Patch Ager.

KETTLES

20—Textile Copper Steam Jacketed Color Kettles, tilting type, agitated, 24 to 100 gallons capacity.

CAN DRYERS

450—Dry Cans, 50" to 108" face, 23" to 84" dia.

FULLING MILLS

6—Rodney-Hunt Fulling Mills, gear drive.
2—Single Line Fulling Mills, rubber rolls.

OPEN WASHERS

1—Continuous Full Width Washer, consisting of 3 sections, 4 nips, each section, 66".
1—60" Continuous Boil-Off Machine, steel tanks.
1—Van Vlaanderen 18-compartment Print Washer.
1—Van Vlaanderen 60" Open Washer.
1—Textile 8-compartment Open Washer.

ROPE SOAPERS

1—Van Vlaanderen Continuous Square Formation Washer.

DYE BECKS

25—Butterworth, Morrison & V.V. 6' & 8' Dye Becks, stainless steel and wood tubs.
10—Morrison & V.V. Dye Becks.

BLEACHING

8—Bleaching 4-5 ton Kiers, vomit type.
1—5-ton Kier, circulating type.
2—Lincoln 2-Roll Rope Squeeze Rolls.

SCOURING & DYEING MACHINES

2—Haveg Dye, or Washing Machines, completely enclosed, 51" wide.
1—Sargent 3-Bowel Skein Scouring Machine.
3—Klauder-Weldon Skein Dyeing Machines.
1—Obermaier 400# Package Dyeing Machine.
1—Sargent 4-Bowl Wool Scouring Washer, 48".
1—Rodney Hunt 7-String Dyeing Machine.
1—Obermaier Combination Package & Rawstock Dyeing Machine.

DYE JIGGS

6—Dye Jiggs, 54" rubber covered rolls.
1—Battery 4-Butterworth stainless steel lined Dye Jiggs, 45".
1—Battery 4-Morrison stainless steel lined Dye Jiggs, 50", tilting expanders.

SINGEING MACHINE

1—80" 2-Burner Singeing Machine.

EXTRACTORS

4—V.V. & Tolhurst 60" rubber & copper basket Extractors.
10—V.V. Fletcher & Tolhurst 40", 44", 48" Extractors, copper lined.
12—Tolhurst, American Laundry, Adams, Troy & Bach Copper Lined Extractor, 17", 20", 26", 28" & 32".

CALENDERS

2—V.V. Ball bearing Calenders, 50" & 60".
2—McCrear, 50" & 54" Knit Goods Calenders.
1—Perkins 3-roll Hydraulic Calenders.

SHEARS

3—P. & W. Double Blade Shears, 66½" with list saving device.
1—P. & W. 3-Blade Shear, 60½" with list saving device.

DECATERS

1—Gessner Dry Decating Machine, 72" wide.
2—Gessner [illegible]-decating machines, 50" & 72" wide.

DRYERS

4—National and P.E.S. Loop Dryers, 28', 30', 33' & 65' lg.
1—Phila. Dry Mach. Co. Hurricane Continuous Skein Dryer.
1—P. & S. 72" Raw Stock Dryer, Automatic Feed.
1—Phila. Raw Stock Dryer, 48" Automatic Feeder.
1—P. & S. 36' Loop Dryer, 90" poles. Rebuilt by National. Equipped with high speed booster fans, airfins.
1—Single Truck Dryer.
1—39" Dry Tower for print machine, air fins.
3—P. & S. and Sargent Conveyor Dryers.

NAPPERS

8—D & F, Woonsocker & P & W Nappers, 60" to 90".
1—Gessner 20-Roll 66" Double Acting Napper.
1—60" Box Napper.
2—Single Roll Nappers or Brushing Machines.

TENTER FRAMES

1—W. & J. 80' x 50" Swing Tenter Frame.
1—30' Swing Tenter Frame.
1—Heathcote Pin Tenter Frame
2—25' Pin Tenters.

PALMER QUETCHES

3—Morrison & V.V. 50", 60" & 72" Palmer Quetch Units.
1—V.V. Palmer Quetch Unit, low type, 65" wide.

PADDERS, MANGLES, QUETCHES

4—Textile 50" 2-Roll Dye Padders.
5—Butterworth 50" 2-Roll Starch Mangles.
2—Textile 80" 2-Roll Mangles.
8—Butterworth & Morrison 2 & 3-Roll Quetches, 50", 60", 64" & 72" wide.
5—Quetches, 2 & 3-Roll, 36-72" wide.
1—James Hunter 50" Water Mangle.

STEAMING & FINISHING MACHINES

3—Steaming Machines for Tubular Goods.
2—C & M Finishing Machines for Tubular Goods.

BUTTON BREAKERS

3—Morrison & V.V. Button Breakers, 50", 60", 72" brass rolls.

CONDITIONING MACHINES

2—Sjostrom Cooling [illegible] Machines.

BEAMERS—BATCHERS

4—Van Vlaanderen 50" & 55" Beamers.
20—50" & 60" Batchers.

EXAMINING MACHINES

2—Examining Machines for Tubular Goods.

FLAT FOLDERS

4—Elliot & Hall Flat Folders 42" to 60".

DOUBLERS

8—P. & W. & Windle 46-66" Doubling, Reeling & Measuring Machines.

SEWING MACHINES

5—Merrow 60ABB & 60D3B on tracks.
4—Merrow 60ABB & 60D3B on portable stands.
250—Metropolitan, Union Special and Singer.

TRUCKS

100—Four Wheel Flat Body Creel Trucks.

PUMPS

2—Deep Well Pumps.

PRESSES

1—Logemann All Steel Paper Baler.
2—Schiem & Economy All Steel Presses.
1—Gessner 72" Wool Press.

LOOMS

20—82", 4 x 1 Auto. Looms.
4—Crompton & Knowles 4 x 4 80" Rayon Looms.
100—Crompton & Knowles 50" Rayon Looms.
94—Draper Automatic Model E 41" Looms.

WORSTED & COTTON SPINNING FRAMES

24—Ring Spinning Frames, 160 spindles, 9½" pitch, 8" travers, 1[illegible]" ring, 4" front roll.
14—Lowell Cotton Spinning Frames, 3" gauge, 2" ring.

COUNTERS

250—Waltham Pick Counters.

WATER SOFTENERS

1—Permutit Water Softener, 10[illegible]" sq. 63" wd.
2—10 x 10 Vertical Softeners, Zeolite.
2—Pressure Sand Filters, 8" dia., x 20' lg. complete with pipe and valves.

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of
RAYON COTTON WOOL
WOOL FABRICS and WORSTEDS

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4—Davis & Furber worsted cards 54"x48" with iron cylinders — Bramwell 54" automatic feed rolls

4—Davis & Furber worsted cards—2 cylinders 60"x54" iron cylinders, Bramwell 60" autom. feed

1—Sargent four bowl wool scouring washer size 48" wide — autom. feeder, Model O

1—Philadelphia raw stock dryer—48" autom. feeder

140—Draper looms model D automatic 82" Reed cam looms—roller tops—belt-driven 4 bank sliding bar stop motions

43—Stafford 1926 1x1 automatic looms—motor driven 72" cloth—electric stop motions

10—P. & W. 66½" double blade shears—list—savers

1—50" P. & W. Rayon semi-decator with Hytor Nash pump

3—10' Kier heaters—single heads

3—9' Hunter slack wash machines

1—Kemp high pressure gas machine with expansion tank—safety tank—pipes and valves

8—Ceiling fans with D.C. motors

1—3 box open washer 50" 3 nips—brass and rubber

1—Eppenbach #1 colloid mill D.C. motor

1—50" Van Vlanderen roll extractor with motor

5—W. & J. tenters 50'-40'-30' St-St-clips 50" & 60" wide

2—90' tenters 45' wide

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Parkhurst 48 in. duplex BURR PICKER
2—Proctor & Schwartz RAW STOCK DRYERS
3—WHITIN 50 inch Card FEEDS
15—TOMPKINS KNITTING TABLES
5—Psarski RAW STOCK DYERS
11—D&F MIXING PICKER & FEED
13—U.S.-HOFFMAN PRESS like new.
16—VERTICAL KNIT GOODS DRYERS

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BURR WHEELS

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Cameron type SLITTING MACHINES
Firsching type SLITTING MACHINES

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2420—Bell, 5¾" O.A., 1 5/16" Dia.
670—Conical, 5 14/16" O.A., 1½" Dia.
4034—Bell, 7¾" O.A., 1 8/16" Dia.
1550—Straight, 5⅞" O.A., 2 1/16" Dia.
869—Straight, 5¾" O.A., 2 1/16" Dia.
670—Straight, 6⅛" O.A., 2 1/16" Dia.
546—Straight, 6⅜" O.A., 2⅜" Dia.
100—Bell, 6 9/16" O.A., 1 15/16" Dia.
2428—Conical, 7⅛" O.A., 2 15/16" Dia.
1500—Straight, 6⅜" O.A., 2⅜" Dia.
174—Straight, 6⅛" O.A., 2 3/16" Dia.
331—Straight, 6 3/16" O.A., 2¼" Dia.

SPINDLES

16" SPINDLES

180—Spd. 16⅝" O.A., 13 3/16" Blade.
75—Spd. 16½" O.A., 13¼" Blade.
90—Spd. 16 9/16" O.A., 13¼" Blade.
24—Spd. 16 9/16" O.A., 13⅜" Blade.
40—Spd. 16¾" O.A., 13¼" Blade.
40—Spd. 16⅞" O.A., 13" Blade.

17" SPINDLES

85—Spd. 17" O.A., 13" Blade.
204—Spd. 17" O.A., 13⅜" Blade.
24—Spd. 17⅛ O.A., 13⅜" Blade.
75—Spd. 17 3/16" O.A., 13¼" Blade.
450—Spd. 17 3/16" O.A., 13½" Blade.
612—Spd. 17¼" O.A., 13⅜" Blade.
504—Spd. 17¼" O.A., 13½" Blade.
1788—Spd. 17½" O.A., 13⅜" Blade.
1000—Spd. 17⅝" O.A., 14⅜" Blade.
612—Spd. 17¾" O.A., 13⅜" Blade.
4896—Spd. 17⅞" O.A., 14" Blade.
180—Spd. 17⅞" O.A., 13¾" Blade.

18" SPINDLES

408—Spd. 18" O.A., 13¾" Blade.
1060—Spd. 18" O.A., 14" Blade.
150—Spd. 18 9/16" O.A., 16¼" Blade.

19" SPINDLES

612—Spd. 19" O.A., 15¼" Blade.
156—Spd. 19⅛" O.A., 16¾" Blade.
24—Spd. 19¼" O.A., 15 7/16" Blade.

20" SPINDLES

432—Spd. 20" O.A., 16 7/16" Blade.

TUBES

2000—Friction Drive, 6¼" O.A., 4½" outside Whorl.
50—Split, Friction Drive, 6¼" O.A., 4½" outside Whorl.
125—Spur, 6¼" O.A., 4½" outside 1" Whorl.
560—Split, Friction Drive, 7" O.A., 5 13/16" outside 1" Whorl.

Box 495 Pawtucket, R. I.

FOR SALE

2—single cylinder 20" x 60" garnetts.
3—single cylinder 30" x 60" garnetts.
1—single cylinder, Hunter garnett complete with lapper.
1—single cylinder P & S garnett complete with lapper.
2—two cylinder 20" x 60" garnetts, single coffer.
1—two cylinder 20" x 60" garnett, double doffer.
1—three cylinder 30" x 60" P & S garnett with breast.
1—30" Atlas picker.
1—36" P & S picker.
3—Schofield mixing pickers.
1—Butterworth shoddy picker.
2—all iron square box willows.
1—D & F Automatic willow.
1—10' P & S type cone willow.
1—96" Schofield automatic willow.
1—7 foot Sargent cone willow.
7—36" x 36" Saco-Lowell ceiling condensers.
2—18" x 30" P & S ceiling condensers.
1—18" x 18" P & S ceiling condensers.
5—Condensers, blowers or fans.
2—14 feet stock conveyors, apron type.
4—60" Bramwell self feeds.
2—48" Bramwell self feeds.
2—40" Bramwell self feeds.
5—late type 60" Apperly feeds.
2—60" Hunter metallic card breasts.
4—Hartman 60" card tape condensers.
4—Hartman spinning mules or frames.
1—Davis & Furber 4" ring woolen spinning frame.
2—P & S Screening machines.
2—two string Hunt fulling mills.
2—six string Hunter washers.
2—Automatic stock oilers.
1—2½" gage, D & F mule.
4—sets of 12" x 60" ring doffers.
1—Revolving bale loader.
4—Draper, motor driven tape looms.
4—Lowell 204 spindle 3" gage spinning frames.
2—30" x 60" garnett cylinders.
3—20" x 60" garnett cylinders.
12— 4" x 60" garnett workers.

Other garnett rolls.

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UNION SPECIAL SEAMERS

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Cable: Maquintex—Code Bentley's

FOR SALE!

22—Heward-Bullough Drawing Frames
2—Saco-Lowell 2 Cylinder Slashers
1—Altemus Yarn Splitter and Coiler
1—Textile 42" Backfiller, Brass Expander
2—Dye Jigs, Wood Tubs, 54" Beam Rolls
1—Butterworth 98" face 2 Roll Mangle
1—Arlington 66" Crabb, 4 Compartments
1—Set 27 Copper Dry Cans, 23" x 47" face
1—Set 30 Copper Dry Cans, 23" x 50" face
1—Van Vlaanderen 50" 3 Roll Hydraulic Calender
1—Butterworth 65" 3 Roll Calender
1—Butterworth 103" 3 Roll Calender

JAMES E. FITZGERALD
TEXTILE MACHINERY DEALER
10 Purchase Street Fall River, Mass.

OFFERED FOR IMMEDIATE SALE

BURR CRUSH ROLL MACH.

60" Broadbent Copper-Basket under-belt-driven Hydro-Extractor

PAUL M. BROOMFIELD
15 Hathaway St. Boston 10, Mass.

Jute Yarn or Rope Machinery

4—Lawson & Leeds Spinning Frames, 56 spindles on side, 4" pitch, 2½" x 4" bobbin, to make 6s to 8s yarn.
2—Brownell Twisters, 6" pitch, 48 spindles on side, 2 ply yarn up to 10s yarn.
5—Heavy Universal type Winders, 6 spindles in a gang
2—4" traverse 4 x 4
3—6" traverse 6 x 6
1—Roping Machine, 4 coils or flyers. From ⅛" to 5/32" rope.
1—Roping machine, 2 coils or flyers. From 9/32" to ⅝" rope.
2—Haskell Dawes Former Stands, 11" x 13" traverse. Two flyers each. Can take up to 10 ply.
3—Sargent Balling machines, 12 spindles, 8" pitch. Will make a ball ½ to 1 pound per ball.

JOHN CLISHAM
Textile Machinery
Castor & Devereaux Ave. Phila. 24, Pa.

KNITTING MACHINES

Scott & Williams — Banner — Wildman — Reading — Kalio — etc., etc.
All types of hosiery mill equipment on hand.
THE MORRIS SPEIZMAN CO.
508-14 West Fifth St. Charlotte, N. C.

FOR SALE

Whitin Novelty Yarn Twisting Machines, Tape Drive, Individual Motors, Reverse Twist Arrangement, 200 Spindles each. 3½" Gauge, 2½" Vertical Rings.

Excellent Condition

FS-808, Textile World
330 W. 42nd St., New York 18, N. Y.

FOR SALE

30" LOOMS

76—Draper 30" Model E used looms in good condition. Complete with Lacey top motions, pulleys, shafting, beams, etc. Located in South.

AMES BAG CO.
10 East 40th St. New York, N. Y.

Your inquiries to advertisers will have special value . . .

—for you—the advertiser—and the publisher, if you mention this publication. Advertisers value highly this evidence of the publication you read. Satisfied advertisers enable the publisher to secure more advertisers and—more advertisers mean more information on more products or better service—more value—to YOU.

LIQUIDATING

EXCELLENT TEXTILE EQUIPMENT READY FOR IMMEDIATE SHIPMENT

SPECIAL

4—James Hunter Squeeze Rolls, 2 Top and 1 Bottom Rubber Covered Rolls, 50" Face, Hand Screw Lever Set, with countershaft.

5—James Hunter Squeeze Rolls, 16" Rubber Covered Top and Bottom Steel Roll, Hand Screw Lever Set, with Countershaft.

KNITTING

160—Scott & Williams Nye & Tredick Circular Ribbers, Range 10" 10 cut 8 feet to 23' 14 cut 12 feed.

New Wildman, Scott & Williams and Nye and Tredick Needles, in original boxes.

SEWING

Union Special	Willcox & Gibbs
35300	All Styles
9900	
15400	**Singers**
16800 with Pullers	All Styles

Metropolitan

All Styles

WATER SOFTENING AND FILTRATION EQUIPMENT

2—Permutit Water Softeners, 10' Diameter x 16' Long, with Interconnecting Piping, Valves, Meters and large quantity of Zeolite.

2—Permutit Type C, Electric Chemical Feeding Devices, Constant Feed.

1—Permutit Vertical Water Softener, 5' x 6' with Valves, Piping and Zeolite.

7—Hungerford & Terry Horizontal Steel Pressure Water Filters, 8' x 20', 8,000 Gallons Capacity, 5/8" Plate, equipped with Cross Piping 8" Valves and all accessories.

1—Filter Everson 42" x 48".

1—Filter Permutit 6'6" x 6'.

1—Permutit Single Vertical Water Softening Unit, Steel Tank, Size 10' x 10', Oval Slide Manhole Opening, with Trident 3" Water Meter, Safety Valve, and 4 Gate Valves 5#.

COUNTERS

34—Veeder Root Pick Counters.

SPECIAL
ENGRAVING EQUIPMENT

7—John Hope 50" Pantograph Machines, Double Bar.

10—John Hope 48" Pantograph Machines, Double Bar.

1—John Hope 45" Pantograph Machine, Double Bar.

BELTING

1—Let Wood and Fibre Variable Speed Drive Belts.

FINISHING

Bleach House Equipment

2—8' x 9' Kiers.
2—10' Log Washers.
2—Bleach House Squeezers.

Calenders

1—Van Vlaanderen 3 Roll Finishing Calender, Wool Felt Bowls, Large Diameter.
3—Textile 50" 5 Bowl Calenders.
2—Textile 45" 3 Bowl Friction Calenders.

Can Dryers

1—set of 20 Cans Textile Copper Cans 23" diameter, 54" face, Vertical Stack.
1—set of 18 Cans, 23" x 45" face, Vertical Stack.
1—7 Can Butterworth Copper Cans, 23" diameter, 80" face.
1—Textile Can Drying and Rolling Up Machine, Copper Can 36" diameter, 50" face.
1—set of Textile Dry Cans—15 Cans—23" x 78".

CALENDER ROLLS

1—Paper Covered Silk Calender Roll, 50" Face, 16¼" Diameter, 59¾" Between Shoulders, Diameter of End Shaft 4 15/16", Length of End Shaft 6¾".

1—Steel Calender Roll, Newly Cotton Covered, 50" Face, 20" Diameter, 61" between Shoulders, Shaft 9" each End, Diameter 6 15/16".

6—Steel Schreiner Calender Rolls, 42" and 46" Face.

SPECIAL

500—Butterworth Tenter Chain Clips, Type O-O Top Opening, Brass Faced Clips.

Decators

1—Parks & Woolson, 72" Semi-Decater with Blanket, Nash Vacuum Pump and Motor.

Doublers

2—Parks & Woolson 54" Doubling and Reeling Machines.
1—Van Vlaanderen 60" Doubling and Winding Machine.

Dye Becks

1—Monel Metal Solid Tub Dye Beck, 5' with Monel Reels.
2—Stainless Steel Lined Sample Dye Becks.
1—Van Vlaanderen 4' Stainless Steel Lined Dye Beck.
1—Van Vlaanderen 19' Cypress Dye Beck.

Dye Jiggs

6—Textile Copper Lined Dye Jiggs 45" Face.

Dye Padder

1—Butterworth 2 Roll Dye Padder, Brass and Rubber Roll Motor Driven.

SPECIAL

5—Textile Dye Jiggs, 54" Wooden Tub, 2 Rubber Covered Ball Bearing Top Rolls, 4 Stainless Steel Immersion Rolls, Bevel Gear Drive.

1—De Laval Worm Reduction Gear Unit, direct connected to Lincoln 10 H.P. A.C. Motor, 550 volts, 60 Cycle, 3 Phase, 1200 R.P.M., with Control.

1—Battery of 4 Morrison Stainless Steel Dye Jiggs, 50", A.C. Motor Drive.

Embossers

1—Textile Two Roll Embossing Calenders, 12" face, One Roll Gas Heated, Pulley Driven, Complete with Table and Winder.

Extractors

1—American 48" Open Top Motor Driven Extractor, Copper Basket.
3—Hercules 63" Motor Driven Extractors, Copper Basket.

Folders

1—Eastwood Gray Goods Folder, 60" Wide.
3—E & H Flat Folders, 45" to 60" Wide.

GAS SYSTEM

1—Kemp Automatic Gas System, with Rotary Pressure Blower, By-Pass Valve, Back Fire Preventer, and Expansion Chamber.

GEARS

Bronze Print Machine Gears, Assorted Sizes

METER

1—General Electric Flow Meter, Type F-12.

KETTLES

6—Copper Steam Jacketed Mixing Kettles, Equipped with Double Motion, Bronze Agitators, 70 to 350 Gallons Capacity.

Palmer

1—65" Van Vlaanderen Palmer Tenter Quetsch Unit, with Stainless Clips and Housing.

Printing

1—Werner 50" Single Color Print Machine.
1—Rice, Barton & Fales 7 Color 50" Print Machine.
2—Rice, Barton & Fales, 42" Print Machine, 8 and 11 color.

PRINT MACHINE MOTORS

5—Print Machine Motors, 25 to 35 H.P.

Tenter Frames

1—30' Windsor & Jerauld Open Tenter Frame with Steam Heating Coils.
1—60' Windsor & Jerauld Tenter Frame with Proctor & Schwartz Housing.

SPECIAL

1—Butterworth 42" Hydraulic Schreiner 2 Bowl Calender, equipped with Cotton and Steel Engraved Rolls, Gas Heated Friction Unrolling and Batcher, Tension Rolls, Complete with Accumulator and Pump, direct connected to General Electric 3 H.P. A.C. Motor, 550 Volts, 60 Cycle, 3 Phase, 900 R.P.M., Type M. T., with Drum Controller, Magnetic Switch and Grids.

REMEMBER
★ ★ ★ ★
Republic Textile
EQUIPMENT COMPANY
40 WORTH STREET NEW YORK CITY
Purchase and Sale of Used Machinery
REFINANCING • APPRAISALS • PURCHASE • SALE • LIQUIDATION OF MILL PROPERTIES

(Continued from page 213)

WANTED
Tricot Technician
New York City

Experienced warp knitting machine operator, familiar with mechanical problems. Creative ability as sample maker. Unusual opportunity for development in the executive end of a large going business.

Give full details as to age, education, experience and starting salary expected, in letter of application to

P-841, Textile World
330 W. 42nd St., New York 18, N. Y.

WANTED
WOOLEN TEXTILE COST ACCOUNTANT

Thoroughly familiar with standard cost.
Permanent Position — Established Co.

LOCATED NEAR BOSTON

Write giving details of experience.

P-843, Textile World
330 West 42nd St., New York 18, N. Y.

WANTED
SALES MANAGER

Commanding wide acquaintance among executives and technical personnel of leading textile manufacturers in East and South. Offered exceptional opportunity with large chemical manufacturer of Textile Finishing Specialties. Reply to

SW-833, Textile World
330 West 42nd St., New York 18, N. Y.

Dyer and Chemist Wanted

Narrow fabric mill located in the South, requires the services of a man who can supervise the dying of narrow fabrics both cotton and rayon for package and skein, on vat and direct colors. Good opportunity for a man who is looking for a permanent position. Please write giving full particulars.

P-831, Textile World
330 W. 42nd St., New York 18, N. Y.

WANTED
FIXERS
for Scott & Williams
and
Acme
Hosiery Knitting Machines
Steady Employment
P-813, Textile World
330 W. 42nd St., New York 18, N. Y.

WANTED
FIXER
thoroughly experienced on full-fashioned hosiery machines.
P-832, Textile World
330 W. 42nd St., New York 18, N. Y.

NAPPER-MAN WANTED

Experienced in Napping various types of Woolen fabrics. Capable of grinding and taking care of Nappers. Give references.

P-836, Textile World
520 North Michigan Ave., Chicago 11, Ill.

POSITIONS WANTED
(Continued from page 213)

SUPERINTENDENT and manager of labels, ribbons, tapes and webbings now employed would consider a like position or one as technical advisor for the production and manufacture. Highest of references furnished. PW-848, Textile World, 330 W. 42nd St., New York 18, N. Y.

REPRESENTATIVE AVAILABLE

UNIVERSAL TEXTILE AGENCY of 232 Castlereagh Street, Sydney N.S.W. Australia, agents and wholesale distributors, would like to start negotiations, with a view to immediate and post-war business of buying and distributing cotton, rayon, coloured woven, plain and printed piece goods, and will be pleased also to consider buying and distributing other fashion lines such as ribbons, scarves, etc.

WANTED

WANTED BY ONE WHO KNOWS the exact spot where each item is most urgently needed. Any type yarns, natural or dyed cotton, rayon, acetate. Cash. W-762, Textile World, 330 W 42nd St., New York 18, N. Y.

FOR SALE

WE SOLICIT offers; used woolen mill, good operating condition:—82" 4x4 looms; card and mule; cone warper; cone winder; fulling mill; large centrifugal; washer; carbonizer; longitudinal shear; piece and yarn dyeing machine, monel or stainless; 10 HP Hydraulic press; narrow carpet looms. FS-844, Textile World, 330 W. 42nd St., New York 18, N. Y.

FOR SALE: Several Worcester Compressor Spoolers for 45-inch, 40-inch, and 36-inch spools, with bobbin stands. In good condition. FS-850, Textile World, 330 W. 42nd St., New York 18, N. Y.

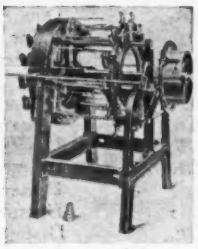
WANTED

ANYTHING within reason that is wanted in the field served by Textile World can be quickly located through bringing it to the attention of thousands of men whose interest is assured because this is the business paper they read.

Keep up Textile War Production!

TWISTING • WINDING • KNITTING • BRAIDING • ROPE MACHINERY

BRAIDING MACHINES



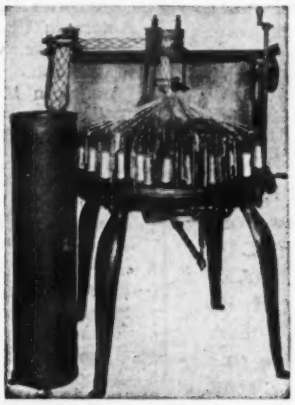
of all types for use in the manufacture of parachute cords, military cords, flat tapes, rugs, elastic tapes and braids, wire cords and braids, etc.

TWISTING MACHINES

in various makes, for hundreds of uses such as: cords, twines, rope, guimpe, wire, etc.

KNITTING MACHINES

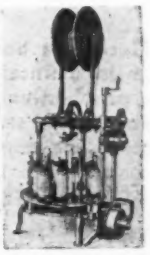
for use in the manufacturing of nettings, cloths of all types, rug materials, curtains, elastic girdle fabrics, hosiery webbing, shoe cloths, pocketbook materials.



WINDING MACHINES

of all types and makes for threading, winding and spooling.

We have been handling above type of equipment for the past 20 years and solicit any and all inquiries for anything in textiles.



All above priced for quick sales. Quite a few knitting and braiding machines set up on our floors, where all machines are located. Machines in operating condition with material such as nets, rugs, dish cloths, cords, flat plain and fancy braids in them.

ROBERT SOLOMON & CO., Inc.

162-168 Greene Street, New York, N. Y. Textile Equipment Specialists

WANTED

WANTED

Plain compression spooler, Davis & Furber Model '44 or other model.

W-834, Textile World
330 W. 42nd St., New York 18, N. Y.

WANTED

Used Narrow Axminster Jacquard Gripper or Nipper Loom

W-837, Textile World
330 W. 42nd St., New York 18, N. Y.

WANT TO BUY

Bradford Spinning Plant

Complete or Incomplete

W-842, Textile World
330 West 42nd St., New York 18, N. Y.

C & K Automatics Wanted

One to four C&K heavy worsted 4 by 1 box automatic bobbin changing looms 82" or 92" wide. Give full details, price, and where can be seen.

W-835, Textile World
330 West 42nd St., New York 18, N. Y.

WANTED IMMEDIATELY

Complete Jacquard Weaving Plant for Cotton or Rayon Comprising 12 C & K Looms 64"—14 C & K Looms 56" 4 x 4 boxes
12 Jacquard Machines 1300 Hook
16 Jacquard Machines 600 Hook

W-853, Textile World
330 West 42nd St., New York 18, N. Y.

COTTON CARDS WANTED

Reasonable condition.
40 in.

WINTHROP SPINNING
Manchester, N. H.

WANTED

3, 5, or 7 cylinder Johnson Rayon Warp Sizer.

W-852, Textile World
330 West 42nd St., New York 18, N. Y.

WANTED

Laboratory jig, single color, second-hand printing machine, five gallon jacketed copper kettle, 1 pound Franklin machine and pad.

R. C. BROWN
Room 7464, Nemours Bldg. Wilmington 98, Del.

WANTED
MODEL 35
FOSTER CONE WINDER
40 or 60 SPINDLES
8" TRAVERSE

W830, Textile World
330 West 42nd St., New York 18, N. Y.

TEXTILE MACHINERY

1—C. G. Sargent—7' 10 section, 3 apron Carbonizing Dryer with Feeder.
1—Hunter, 5', 6 section, 3 apron Carbonizing Dryer with Feeder.
2—Smith & Furbush Cards, 4 lickerin type, 2 cylinder 54 x 54. All iron except doffers and workers.
3—James Smith Single cylinder Cards with breast. Wood construction. 54" dia. 60" wide. Proctor & Schwartz 60" Feeders.
1—Prince Smith Single Can Preparing Gill Box ¾" pitch, double cut screws. Practically new.
1—2 spindle Gill Box ½" pitch, 14x9 bobbin.
6—Hall & Stell 48 spindle Flyer Roving Frames, 4½" pitch, 5 x 3 bobbin.
3—Hall & Stell 48 spindle Flyer Roving Frames, 4½" pitch, 6 x 3 bobbin.
1—Hall & Stell 168 spindle Cap Spinning Frame, 3½" pitch, 3½" low front roller.
3—J. B. Farrar 168 spindle Cap Spinning Frames, 3¼" pitch, 4" low front roller.
7—Hall & Stell 164 spindle Cap Trap Doll Roll Twisters, 3½" pitch.
2—Prince Smith Univ. Ring Trap Twisters, 160 spindles, 4 ply, 3½" pitch, 6 x 2½" bobbin.
2—Prince Smith Universal Ring Trap Twisters, 188 spindles, 4" pitch, 6" traverse.
1—Foster Cone Winder Model 12, 80 ends.
1—Foster Doubler Model 25, 80 ends.
3—Worcester Warp Compressors, 6 drum, 40 ends, 22⅝" scroll roll.
6—Single Drum Jackspoolers.
1—Volker Press 66" cylinder, 16" dia.
2—Gassner Jumbo 66" Presses with overhanging reduction gears, rolling and folding attachments. Clutch driven.
1—Gassner 80" Single Acting Napper.
1—Green Single Acting Napper 12 rolls 72" wide.
25—30 harness double index dobby Automatic Looms 52" reed space, 4 x 1 box, motor driven.
144—Draper Cam Looms, motor driven, 76" wide.
66—Crompton & Knowles Looms 82", 4 x 1 box, 16 harness Change over magazine, motor drive.
20—Crompton & Knowles Dobby head Looms, 24 harness, 76" reed space.
2—Hunter Dolly Washers. Clutch driven, 1 has water box in rear; 1 has water manifold in rear. All wood rolls.
1—48" Centrifugal Extractor. Bevel gear top.

JOHN CLISHAM
Castor & Devereaux Ave. Phila. 24, Pa.

WANTED

WANTED

Your Obsolete Sewing Threads

Send samples and quantities for quick disposal.

W-675, Textile World
330 W. 42nd St., New York 18, N. Y.

Here is a booklet that is helping more and more mills maintain necessary sanitary standards . . . a problem aggravated today by increased personnel and extra shifts. It describes a unique development for expediting this work:

Oakite Deodorant No. 1

This material successfully accomplished THREE Sanitation jobs in ONE time-saving operation: it CLEANS, it DEODORIZES, it DISINFECTS surfaces to which it is applied. Moreover, OAKITE DEODORANT No. 1 has no odor of its own . . . leaves none. Economical, too . . . costs only a few pennies a gallon! Your copy of this 16-page informative booklet is FREE . . . send TODAY!

OAKITE PRODUCTS, INC., 42 Thames Street, NEW YORK, N. Y.
Representatives in All Principal Cities of the U. S. and Canada

OAKITE MATERIALS · METHODS · SERVICE — Buy Bonds for Victory — **CLEANING** FOR EVERY CLEANING REQUIREMENT

STANDARD SILICATES

KIER BOILING

For better whites and level results, use a pound of STANDARD Grade 40 Silicate with each 3 to 5 lbs. of caustic in your kier boiling formula. Troublesome stains are eliminated and scarce chlorine is saved.

Ask the STANDARD service staff about grey sour-silicate kier boiling procedure for better whites with less bleach.

ALKALI

DIAMOND ALKALI COMPANY
STANDARD SILICATE DIVISION
GENERAL OFFICES: PITTSBURGH, PENNSYLVANIA
Plants at CINCINNATI · JERSEY CITY · LOCKPORT, N. Y.
MARSEILLES, ILL. · DALLAS, TEXAS

INDEX TO ADVERTISERS

An * indicates additional data is in 1943 Textile World Yearbook and Catalog.

*Abbott Machine Co. . . . 167
Acme Knitting Mach & Needle Co. 203
*Alemite Div. Stewart-Warner Corp. 52
Allegheny Ludlum Steel Corp. 39
Allen Company. 193
*Allis-Chalmers Mfg. Co. 7, 41
*Alloy Steel Products Co. 31
American Blower Corp. 44
American Chain & Cable Co., Inc. Wright Mfg. Division 68
*American Monorail Co., The 32
American Rolling Mill Co., The 40
American Steel & Wire Co 57
American Viscose Corp. 14
American Woolen Co. . . 203
American Yarn & Processing Co. 212
*Aridye Corp. 30
Arkansas Co., Inc. 211
Arlington Mills. 196
Armour & Co. 175
Armstrong-Bray & Co. . 195
*Armstrong Cork Co. . . . 9
*Ashworth Bros., Inc. . . . 28
Atlantic Stainpruf Co. . . 212
*Atlas Electric Devices Co. 200
*Bahnson Co., The. 154
*Barber-Colman Co. 207
*Barnes Co., Henry K. . . 135
Beach Soap Co., The Back Cover
*Blickman, Inc., S. 190
*Booth Co., Benjamin. . . 170
Borne-Scrymser Co. 224
Breuer Electric Mfg. Co. 205
Brinton Co. 201
Burkart-Schier Chemical Co. 184
*Butterworth & Sons Co., H. W. 92
*Caldwell Co., W. E. . . . 209
*Cameron Machine Co. . . 199
Carbomatic Corp. 174
Carnegie-Illinois Steel Corp. 57
*Chicago Pneumatic Tool Co. 60
Cities Service Oil Co. . . 120
Cochrane Corp. 187
*Cocker Machine & Foundry Co. 169
Coffing Hoist Co. 189
Columbia Steel Co. 57
Commercial Factors Corp. . Inside Front Cover
Cook Machine Co. 197
Cooper Co., Chas. 201
Cotton Textile Institute. 197
Crabb & Co., William. . 183
*Crane Co. 69
*Crane Mfg. Co. 205
Cravenette Co. (Chemicals Div.). 104
Crocker-Wheeler Div. Joshua Hendy Iron Works 141
*Curtis & Marble Mach. Co. 180
Dana Warp Mills. 199
Daniel Construction Co., Inc. 206
Darnell Corp., Ltd. 162
*Dary Ring Traveler Co., The 197
*Davis & Furber Machine Co. 199
Dayton Rubber Mfg. Co. 25
Devoe & Raynolds Co., Inc. 210
Diagraph-Bradley Stencil Mach. Corp. 187
Diamond Alkali Co., Standard Silicate Div. 222
Diastafor Division, Standard Brands, Inc. 170
Dietert Co., H. W. 204
*Dinsmore Mfg. Co. 201
Dispersions Process, Inc. 106
Dodge Mfg. Co. 54
*Dommerich & Co., L. F. 16
Dow Chemical Co., The 100
*Draper Coropration. . . . 1
Du-Grip Mfg. Co. 185
*DuPont de Nemours & Co., E. I. Finishes Div. 43
Emery Industries, Inc. . . 157
Fall Yarn Mills. 176
Felters Co., The. 156
*Fidelity Machine Co. . . 202
*Finnell System, Inc. . . . 6
Fiske Bros. Refining Co. 64
Fostoria Industrial Service 188
Foxboro Co., The. 66
Franklin Process Co. . . . 27
Franklin Research Co. . . 164
*Fuller Brush Co., The. . 143
Gates Rubber Co., The. 58
General Chemical Co. . . 59
General Electric Co. (Refrigeration Dept.) . . . 96
General Electronic Industries, Division of Maguire Industries, Inc. 51
*Graton & Knight Co. 35, 98
Grinnell Co., Inc. 21
Guf Oil Corp. 62
*Hart Products Corp. . . . 122
Hofman Co., Alfred. . . . 208
Hooker Electrochemical Co. 128
Horn Co., A. C. 108
Houghton & Co., E. F. . 15
*Howard Bros. Mfg. Co. 20
*Hunt Mach. Co., Rodney 193
*Hunter Machine Co., James 155
Hyatt Bearings Division, General Motors Corp. 112
Industrial Gear Mfg. Co. 185
Industrial Rayon Corp. . 24
International Nickel Co., Inc. 110
*International Salt Co., Inc. 177
*Ives Co., L. T. 205
Kaumagraph Co. 137
Keever Starch Co., The. 209
Kenyon & Son, D. R. . . 195
*Lane & Bros., Inc. W. T. 191
Lazenby & Co., F. A. . . 174
Loper Co., Ralph E. . . . 212
Lubriplate Division—Fiske Bros. Refining Co. 64
Maguire & Co., John P. 183
Maguire Industries, Inc. 51
Manhattan Rubber Mfg. Div. 33
*Mathieson Alkali Works, Inc. 2
Meese, Inc. 204
Merrow Machine Co., The 203

(Continued on page 224)

HOW MUCH LESS PAPER CAN YOU USE IN YOUR PLANT?

That's a mighty important question. Paper stocks are seriously low this year, and every time another shipload of paper-wrapped war supplies leaves an American port, the problem gets tougher • The voluntary cuts, the simple economies you have put into operation up to now, won't be half enough in 1944 • The only answer is honest, convincing *paper-pinching* by every one who uses paper • Organize a Paper Conservation Committee in your company. Pick only the best men for this job, and give them a green light so that they can work effectively • From envelopes to heavy cartons, have this Committee see to it that functional packaging is the order of the day—every day • In the panel are suggested many ways your plant can use less paper. But you know your own business best! Go to it *NOW!*

Use Less Paper Because

Multiwall paper bags are used extensively in shipping flour and dehydrated foods.

All openings and exposed surfaces of tanks are sealed with paper for shipping.

Submachine guns are not only paper-wrapped but boxed in paper board. Shell grommets, bomb rings and practice bomb fins are made of paper to save needed steel.

Gas-mask canisters and hand-grenade containers are made of paper.

Paper is used in camouflage strips and netting and parachutes.

All Army clothing and equipment are shipped in waterproof paper wrappers.

Use Less Paper These Ways

Condense letters and memoranda by (a) keeping margins as narrow as possible; (b) sticking to single-space forms; (c) using reverse side of incoming letters as first carbon copy of replies; (d) using reverse side of second sheets for carbon copies; (e) using both sides of all mimeographed sheets.

Check carefully to determine whether your shipping container exceeds the requirements of Rule 41 of "consolidated freight classification requirements."

Eliminate individual cartons in every practical instance.

When individual cartons are indispensable, pack in bulk whenever possible.

Control disbursement of paper supplies to employees so that excessive quantities do not accumulate in desks and departmental supply closets.

This advertisement prepared under the auspices of the War Advertising Council in co-operation with the Office of War Information and the War Production Board.

LET'S ALL USE LESS PAPER

Space for this advertisement contributed by TEXTILE WORLD

Today . . .

IT'S QUALITY THAT COUNTS!

The trade knows that modern standards . . . war standards . . . demand A-1 quality. And they know, because of 68 years of experience, that BORNE SCRYMSER WOOL OILS give them not only the highest quality but value as well.

- ★ BRETON OILS FOR WOOL
- ★ XX SAPONIFIED OIL FOR WOOL
- ★ RER SPECIAL WOOL OIL
- ★ SS WOOL OIL

Highest quality also in:

Apron Oils • Shear Oils • Loom Oils
Comb Box Lubricants
High Pressure Greases
High Temperature Greases

This Seal Your BRETON OILS-WOOL Quality Assurance

BORNE SCRYMSER COMPANY

Originators of the BRETON MINEROL PROCESS for FIBRE CONDITIONING
ESTABLISHED 1874
CHARLOTTE, N. C.
ELIZABETH, N. J.

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(Continued from page 222)

Mill Factors Corp. Inside Back Cover
Monomac Spinning Co. 196
*Monsanto Chemical Co. 10
Morton Mfg. Co. 182

National Cotton Council of America 197
*National Drying Machy. Co. 158
National Lead Co. 161
*National Ring Traveler Co. 199
*National Starch Products, Inc. 173
National Tube Co. 57
New Departure. Div. of General Motors 11
N. Y. & N. J. Lubricant Co. 199
Nonquit Mills 196
Norfolk & Western Railway 102

Oakite Products, Inc. 222
Owens-Corning Fiberglas Corp. 42

Parks-Cramer Co. 186
Penick & Ford, Ltd. 195
Philadelphia Quartz Co. 176
Powell Co., Wm. 151
*Powers Regulator Co., The 178
Prince, Smith & Stells, Ltd. 165
Procter & Gamble 171
*Proctor & Schwartz, Inc. 114

Quaker Chemical Products Corp. 94

Radio Corporation of America 153
Railway Express Agency, Air Express Div. 152
Red Ray Mfg. Co. 206
Reeves Pulley Co. 192
Refiners Lubricating Co. 191
Refinite Corp., The 160
Richmond Oil, Soap & Chemical Co. 174
*Riggs & Lombard, Inc. 183
*Rohm & Haas Co. 61
Rome Soap Mfg. Co. 209
Ryerson & Son, Inc., Joseph T. 168

*Saco-Lowell Shops 8
Sandoz Chemical Works, Inc. 17
*Sarco Co., Inc. 193
*Sargent's Sons Corp., C. G. 116
*Scholler Bros., Inc. 193
*Scott Co., Henry L. 210
Shell Oil Co., Inc. 45
Sinclair Refining Co. (Inc.) 26
Sirrine & Co., J. E. 210
SKF Industries Inc. 18
Socony-Vacuum Oil Co., Inc. 13
*Solvay Sales Corp. 194
*Sonoco Products Co. 133
Southworth Machine Co. 208
Staley Mfg. Co., A. E. 163
*Standard Fabricators, Inc. 185
*Standard Soap Co. of Camden 172
Steelcote Mfg. Co. 189
*Steel Heddle Mfg. Co. 53
*Stein-Hall 124
Sterling Ring Traveler Co. 160
*Sturtevant Co., B. F. 46, 47
Sun Oil Co. 147
Sylvania Industrial Corp. 65

Taber Instrument Corp. 189
Tennessee Eastman Corp. 139
*Terrell Machine Co. 200
Texas Co. 5
Textile Banking Co. 159
Textile Industry Research, Inc. 208
Textile Machine Works 55, 56
*Thomas & Skinner Steel Prod. Co. 168
Tidewater Associated Oil Co. 22, 23
Tompkins Bros. Co. 205
*Torrington Co., The 37, 38
Trust Company of Georgia 198

United Autographic Register Co. 36
U S Bobbin & Shuttle Co. 34
*U. S. Ring Traveler Co. 195
U. S. Rubber Co. 106
U. S. Steel Corp. 57
U. S. Steel Supply Co. 63
U. S. Textile Machine Co. 176
*Universal Winding Co. 70, 144

Virginia Smelting Co. 209

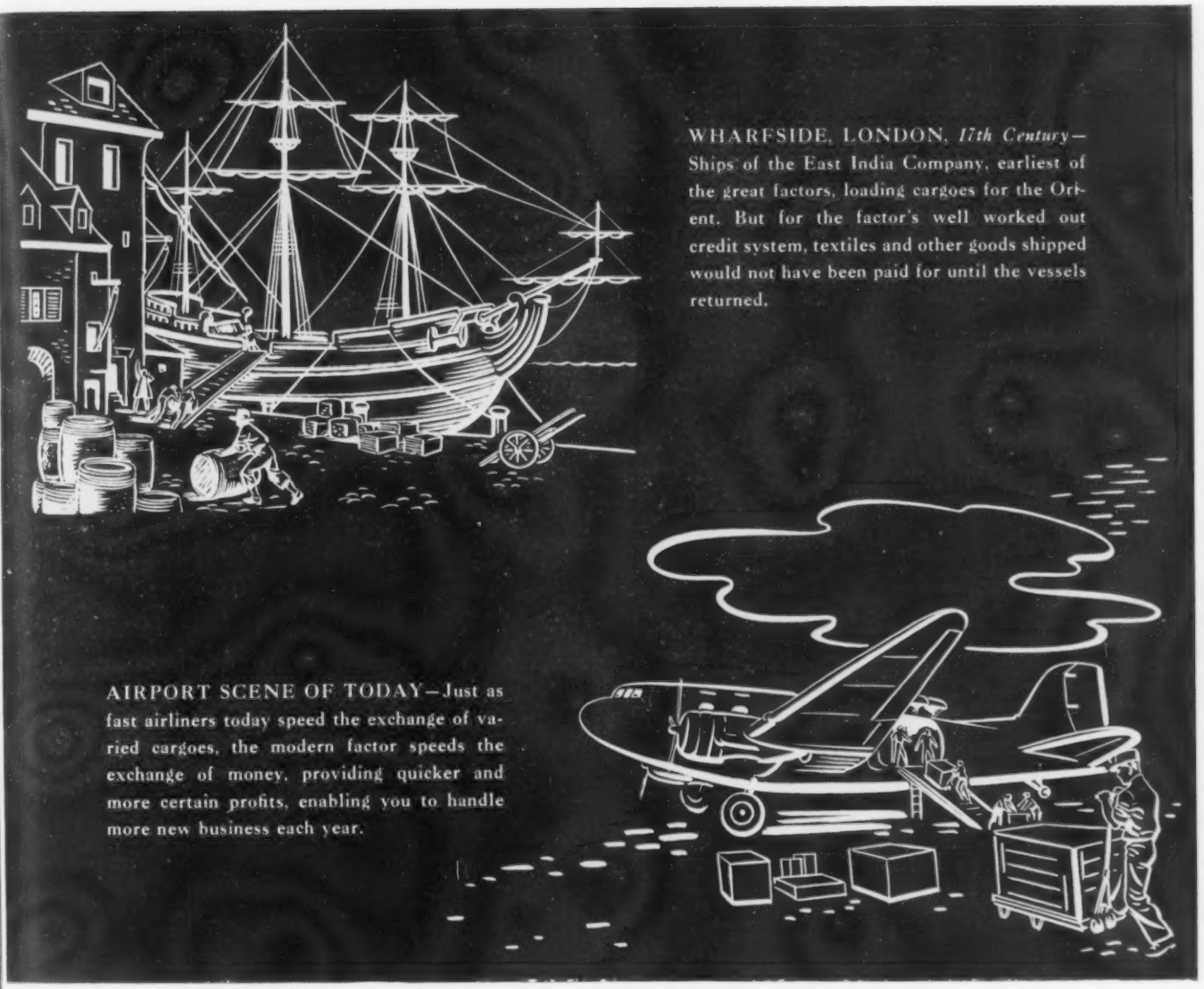
WAK Industries 206
Walder, Jacob 172
Waldron Corp., J. 202
Wallerstein Co., Inc. 187
Wayne Mfg. Co. 176
*Westinghouse Electric & Mfg. Co. 29
Lamp Division 48, 49
West Point Foundry & Machine Co. 131
*Whitin Machine Works. 12
*Whitinsville Spinning Ring Co. 197
Whitman Co., Inc., Wm. 196
Wickwire Spencer Steel Co. 50
Wildman Mfg. Co. 149
Willcox & Gibbs Sewing Mach. Co. 118
Wolstenholme Sons & Co., Inc. 199
Wood's Sons Co., T. B. 67
*Worthington Pump & Machinery Corp. 19
Wright Mfg. Division, American Chain & Cable Co., Inc. 68
Wyandotte Chemicals Corp. 126

PROFESSIONAL SERVICES

Lancaster, Allwine & Rommel 213
Loper & Co., Ralph E. 212
Sirrine & Co., J. E. 210
Tucker, J. L. 213

SEARCHLIGHT SECTION
Classified Advertising

BUSINESS OPPORTUNITIES 220
EMPLOYMENT SERVICE
Raymond Service, Inc., Charles P. 213
POSITIONS VACANT 213, 220
POSITIONS WANTED 213, 220
WANTED TO PURCHASE 221
USED AND SURPLUS EQUIPMENT 214-221
Ames Bag Co. 216, 218
Bay State Textile Co. 216
Broomfield, Paul M. 218
Brown, R. C. 221
Clesham, John 218, 221
Consolidated Products Co., Inc. 217
Fitzgerald, James E. 218
French, C. M. 218
Gaines Textile Mchy. Co. 216
Lincoln, Jr., H. B. 218
Machinery Liquidating Company 214, 215
McCaffery & Son, Inc., L. J. 218
McCloskey, Inc., John J. 216
McDowell, Norman M. 216
Paterson Silk Machinery Exch. 216
Republic Textile Equipment Co. 218
Schwartz, S. B. 218
Smith Textile Machinery Co. 218
Solomon & Co. 221
Speizman, Morris 218
Standard Mill Supply Co. 216
Stanhope, R. C. 218
Stephenson, Harry 216
Textile Auxiliaries 218
Wheeler Co., Frank W. 216
Winthrop Spinning 221



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